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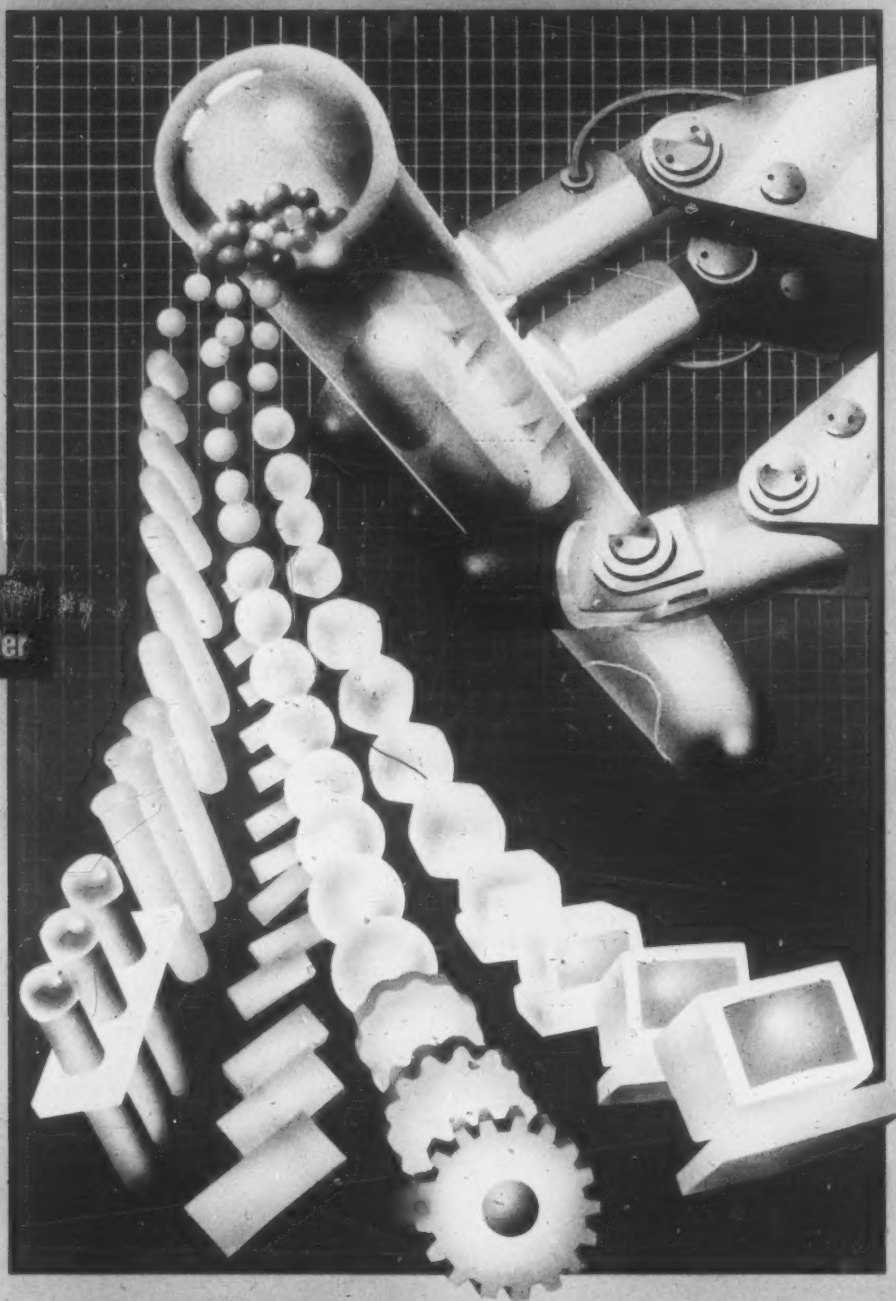

From Academia to the Marketplace: Tech Transfer

REGIONWATCH:

- Personal Income Indicators
- Northwest Oil Flows
- The Market for Graduates

Speaking the Language of Success: The Asian Story

Managing Key Subordinates

Commentary

The Role of the State's Universities in Technology Transfer

The role of Washington's universities in technology transfer and regional economic development is crucial, but not yet fully developed. Universities are the seedbed of new ideas that can make a distinctive, competitive difference to companies. They also contribute to the strength of a region by providing the educated people that can build better businesses and communities and by stimulating cultural arts that will attract and hold other bright minds. This contribution by Washington's universities is threatened and hampered by a lack of legislative and state government support and by internal debates over university-industry relationships.

The economic development philosophies of the 1970s were called smokestack chasing: the state tried to persuade large businesses to establish branch offices or manufacturing facilities in the region. In the 1980s, the philosophy is shifting to the development of home-grown businesses. Building successful businesses requires competence, capital, advice, and nurturing—areas in which universities and state government can contribute. David Osborne, in a recent *Inc.* magazine article, indicated that companies are looking to states with intellectual infrastructure: educated workers, excellent universities, entrepreneurial climates, and an attractive quality of life.

Washington's funding of higher education has slipped from 20 percent of the general fund budget in the 1970s to less than 15 percent today. Michigan, with its automotive industry in a nose-dive, increased funding from 14.3 percent three years ago to 17 percent today and plans to allocate 21 percent in the near future. What's needed in Washington? Return higher education funding to the 20 percent level. Current faculty are first rate, but this region can't compete for the next generation of faculty to maintain our level of excellence. According to the MIT Enterprise Forum in the Northwest, "higher education and entrepreneurship must be rethought, not as luxuries, but as basic economic resources to be conserved, managed and nurtured, or lost."

Does industrial funding compromise research and teaching integrity? Faculty who have been involved with industry have told me that the experience has expanded their research and knowledge, to the benefit of their teaching. Additional benefits to faculty include their access to state-of-the-art equipment and top-caliber industry research scientists.

Universities need to work to modify the attitudes of departments and faculty that discount or discourage industry involvement and to create multidisciplinary approaches that combine talents from several departments. The UW's bioengineering program, the Center for Process Analytical Chemistry, and the Washington Technology Center are recent examples of multidisciplinary research and creativity. The WSU Research and Technology Park is working to provide opportunities for increased industry interaction with the university, but, according to its director, John Schade, "these efforts [must] be continued and expanded if Washington is to keep up with competition from other states."

"When economic times are tough, the [last] thing to do is smash your best jobs-generator," said Richard W. Larsen in the *Seattle Times*. Investment in technology development and nurturing technology transfer and home-grown businesses is not a quick fix for unemployment and economic ills. But this investment must be considered a vital and necessary part of any plan to promote the future economic health of this region. Small, innovative businesses have been identified as the providers of more than 90 percent of new jobs. University technology, transfered to local industry, can create jobs that are competitive, both nationally and internationally, and can be the deciding factor in whether Washington will remain a great place to live and work.

Gerald A. Erickson
President
Washington Research Foundation

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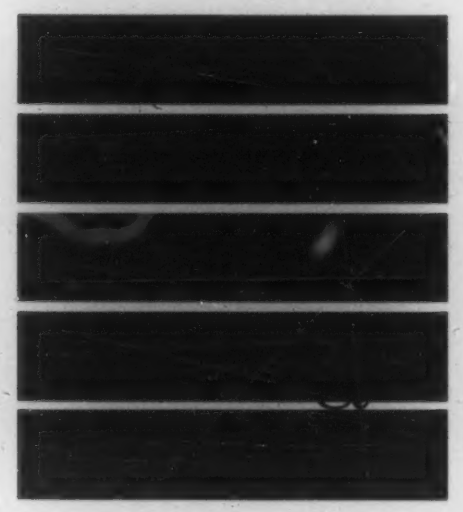


by Craig Justice

A subtle shift in the philosophy guiding the Pacific Northwest's universities is under way. In addition to teaching, research, and public service, some departments—especially those at the frontier of developing new technologies with potential commercial applications—are adding a new dimension to their traditional role. Business.

The Northwest's major universities have increased their technology licensing efforts in response to a changing world economy and a 1980 amendment to the nation's patent laws, which allows universities to own and license inventions discovered by faculty working on federally funded projects. The nation's leading universities are involved with private industry to see if, by increasing their cooperation, they can themselves benefit and, at the same time, promote the public good. The risks include weakening the fundamental research strengths of universities and wasting money on technology transfer projects that do not result in high value-added jobs.

While it is still too early to pass final judgment on the recent campaigns to increase commercialization of university-based research, Northwest universities are demonstrating an improved ability to move inventions from the ivory tower to the private sector without seriously threatening their academic integrity. Academia's potential as a force in regional economic development, however, has yet to be fully harnessed, for many of the inventions developed in the Northwest are manufactured elsewhere. This fact raises the question of whether technologies developed at a state institution should be licensed to the highest up-front bidder or, taking a long-term perspective, licensed in-state to create new jobs.

The Stanford Model

The licensing program adopted by Stanford University in 1970 has served as a model for institutions throughout the United States. "We're a marketing, not a legal, office," said Niels Reimers, director of Stanford's Office of Technology Licensing (OTL). The office was created with two main objectives: to provide a mechanism for bringing technology developed at Stanford to the market more quickly and to establish an additional source of unrestricted income to support research and education. Typically, the office evaluates 10 to 15 invention disclosures a month from professors, graduate students, and researchers. Individual firms are then contacted to identify potential licensees. If the assessment is positive, a patent application is filed. If a discovery requires additional work to develop a marketable prototype, OTL arranges for a firm to fund additional development, in return for an exclusive license for a limited term or an option to license.

Licensing agreements are negotiated on a case-by-case basis. Normally, an initial royalty, diligence provisions, and an earned royalty are included. Part of the royalties, which total more than $5 million annually at Stanford, are used to fund the office's activities, but most are returned to the university, where the profits are shared by the inventors, their departments, and the school.

Spin-off companies from the university, which is located in the heart of Silicon Valley, are not uncommon. In the case of start-up companies based on Stanford technology, the licensing office functions as a marriage broker with venture capitalists and may accept equity as royalty payment in the hope of future capital gains. Business school students may do the market research, write business plans, and become officers of the fledgling companies. Problems have arisen, however, when faculty members leave their teaching posts to run their own companies. To avoid conflicts of interest with university policy, the licensing office no longer accepts equity positions in ventures that include faculty resignations.

The effectiveness of Stanford's approach is illustrated by the restructuring of MIT's licensing program. In 1986 the MIT Patent, Copyright, and Licensing Office hired Reimers, who took a one-year leave from Stanford, as acting director. The patent office changed its name to the Technology Licensing Office and its emphasis from a gatekeeper/legal agent to a marketing representative that can effectively transfer MIT technology to society. MIT began staffing its office with people who had entrepreneurial experience in new tech-

nology areas and who could relate to outside companies and to faculty and student inventors. Legal work is contracted to outside attorneys. In fiscal year 1986, MIT negotiated less than 20 licenses. This year, more than 80 agreements have been signed, and the number of invention disclosures has almost tripled in the last two years. In addition, licensee revenue has increased from $1.8 million two years ago to an estimated $3 million to $4 million for 1987.

Potential for Conflict

Given their central roles of teaching and research, educational institutions—except for land-grant universities—have usually considered economic development a by-product of their activity. But the new relationships being developed between universities and industry across the country have raised concerns that commercial values will be brought into academic life, affecting the way in which basic research priorities are set. At this time, observers say, the increased emphasis given to commercializing university knowledge is still an experiment. The results—and side effects—are unknown. However, they note that the natural barriers separating academia from industry are strong and that new tech transfer initiatives seek only to lower the walls a bit, not tear them down.

An effective technology licensing program requires that standard practices at universities and businesses be modified. One of those is academia's emphasis on publication versus industry's desire for secrecy. "If the details of an invention are published or otherwise disclosed in a public forum before a patent application is filed, the University may forfeit the opportunity to obtain U.S. and/or foreign patent protection. Please keep this in mind as you contemplate publication of research results, presentations at conferences, and other forms of dissemination," wrote the University of Washington's Office of Technology Transfer Director Donald R. Baldwin in a 1985 letter to all faculty.

Secrecy is not a new issue for many research-oriented universities or the University of Washington (UW). Some applied military research programs have required UW scientists to sign confidentiality agreements. But more university faculty than ever before are starting to think business and are willing to delay publication for a period of time if a project is likely to benefit their professional reputation. For their part, firms must adapt to the slower way in which universities do business and accept dissemination of findings more quickly than would occur if development was restricted to the company lab.

In the Northwest

The University of Washington, which receives more federal research grants than any other U.S. public university ($204 million) and ranks fourth among all U.S. universities, seeks to play both national and international roles in developing and licensing technologies. One of its best examples is ultrasound, which came out of a UW laboratory in 1974 and was used to found Advanced Technology Laboratories (ATL) in Bellevue, Washington. ATL is now owned by Squibb and employs about 900 people. Despite this success, the UW did not focus on ensuring that the fruits of its research efforts were commercialized. Licensing was delegated to one part-time employee until 1982, when a task force concluded that results from UW research should be made available as quickly as possible and that royalties produced by an enlightened tech transfer program could supplement research and help retain outstanding faculty.

The UW proceeded to establish an Office of Technology Transfer (OTT) in early 1983. At the end of the office's first year, the university had 24 active license agreements and $30,000 in royalties. OTT, which employs three professionals and three agents, now has more than 50 licenses in effect and annual royalty income of nearly $500,000.

To encourage early disclosure of inventions to the Office of Technology Transfer rather than to the public and to reward inventors for their creativity and assistance, the licensing office established a royalty policy that it claims is generous to inventors and their schools or departments. After a 15 percent administrative fee is deducted from license revenue, the inventor receives 100 percent of royalties up to $10,000. Of the next $30,000 in royalties, 50 percent is paid to the inventor, 25 percent to his or her college or department, and 25 percent to the university. Royalties over $40,000 are split 30 percent, 20 percent, and 50 percent respectively.

A Two-Pronged Approach

Tech transfer at Stanford is primarily an in-house model. The UW's Office of Technology Transfer, in contrast, regularly uses outside licensing agents when it cannot readily identify potential licensees. These are the Research Corporation, Battelle Development Corporation, and the Washington Research Foundation (WRF). The latter, a private nonprofit foundation established in 1981, has been designated as the UW's primary agent.

The foundation experienced a slow start and has yet to achieve a positive cash flow. During the last 18 months, however, a new president, marketing director, and marketing assistant, all with business and technical backgrounds, were hired, and the foundation hopes to break even sometime next year. As of June, WRF had 34 license, distribution, and option agreements in place. Of its license revenues, 63 percent are returned to the university, where they are shared according to the Office of Technology Transfer's formula.

Northwest universities are demonstrating an improved ability to move inventions from the ivory tower to the private sector without seriously threatening their academic integrity.

University faculty are starting to think business and are willing to delay publication for a period of time if a project is likely to benefit their professional reputation.

The WRF serves basically the same function as the OTT, and the two offices coordinate activities to avoid a duplication of licensing efforts. However, the foundation is more willing than the UW to assume risk when dealing with smaller or start-up firms. It will defer royalties and accept equity as payment for up-front evaluation, legal, and marketing costs. This puts would-be in-state entrepreneurs of university technology who need capital at a disadvantage: although the WRF is more willing to take risk and views licensing to start-ups as a profitable strategy for the future, its present financial situation won't allow it to do so often.

Approximately one-half of the Washington Research Foundation's licensees are located outside the state, said Gerald A. Erickson, president, and so are many of the Office of Technology Transfer's. A case in point: in 1983 a team of UW researchers created an endoscopic catheter, which can stop gastrointestinal bleeding without surgery. OTT licensed the device to Advanced Technology Laboratories, which licensed the technology to the Olympus Company of Japan. Although royalties on the more than $12 million in sales have been returned to the UW, the state did not benefit from a direct increase to its manufacturing employment base. "Our short-term need for cash," said Erickson, "has probably driven us more toward outside licensing."

Licensing to in-state firms is not always seen as a viable option in the Northwest. "A lot of companies in the state of Washington don't have the capability to take [new technologies developed at the UW and WSU] on," said William Hostetler, WSU Patent, Trademark & Copyright officer. "Sometimes it's better to go with a Smith-Kline or a Norden Lab."

"If you look at who we should be licensing to, small companies should be at the top of the list," said John Preston, MIT's technology licensing director, citing statistics that 90 percent of net new jobs in Massachusetts come from companies with 25 or fewer employees. Almost half of MIT's inventions are licensed to small or start-up firms. "If you plant a lot of seeds," said Preston, "a few of them will grow and become very profitable."

The same year the UW established its licensing office, the Washington legislature created the Washington Technology Center (WTC). The center has offices at both UW and Washington State University (WSU) and focuses on five areas of applied research, as opposed to basic research. These areas are advanced materials, biotechnology, manufacturing systems, microelectronics, and computer systems and software. The technologies correspond with the universities' research strengths and are linked to the state's aircraft and forestry industries, which give the center's efforts a better chance at producing results that can directly benefit the state.

The technology center is working to establish new ties between the state's universities and industry and strengthen old ones, not only by serving as an extension of some companies' research and development facilities, but also by offering various outreach programs and involving students in its research efforts.

When founded, the center anticipated that its sources of funds would be split evenly between the state, federal government, and industry, but WTC has been extremely successful in attracting industry money. During the 1985-87 biennium, the center effectively leveraged state funds by raising almost double what it expected from industry and federal sources. For every $1 of the $3.6 million allocated to it by the legislature for 1985-87, WTC raised almost $4 from outside sources.

During fiscal years 1983-86, the Washington Technology Center received grants, gifts, and contracts from 39 companies. About 26 percent of industry funding came from out-of-state firms, including IBM (the center's largest private contributor), Sumitomo Chemical of Japan, and Johnson & Johnson. Firms also contribute to WTC by donating equipment; IBM, for example, helped design the center's microsensor lab.

The center's ability to attract outside industry funds is a testament to the quality of research taking place, but that same success generates concern about the commercialization of discoveries outside the region. Last February, the WTC board of directors adopted a "Washington first" policy, stating that the marketing and licensing of all intellectual property developed by the center will favor companies that have research, engineering, or manufacturing operations in the state or that plan to establish such facilities. The Washington Technology Center has recently assigned some of its own technical staff to conduct marketing and licensing, and it will rely less on the Office of Technology Transfer and the Washington Research Foundation. According to Peter Odabashian, director of WTC's Technology Assistance Program, the center turned down a large multiyear contract from an out-of-state firm in 1984 when it learned that the firm planned to manufacture the product outside Washington.

By developing relationships with out-of-state companies, the center hopes to attract new investment to Washington. The experiment has already shown some promise. "Without the WTC, we wouldn't be in Washington State," said Randy Turpin, founder of Chemfet Corporation of Bellevue. Chemfet plans to make and market products based on the microsensor technology developed by UW professor and WTC program director Peter Cheung.

The center has also succeeded in attracting top researchers like Cheung to the state and keeping others from leaving. "It allows us to compete in the big leagues," said Edwin Stear, WTC executive director. "Outstanding professors beget outstanding graduate students who are apt to stay in the state." The center also plans to construct a $15 million

building on the UW campus to gather its UW researchers and their projects under one roof, thus promoting increased communication, "cross-pollination," and new discoveries.

Research Parks and Incubators

WSU operates a patent office that functions similarly to the UW's licensing office, although the technologies involved are different, given the schools' respective research focuses. The University of Idaho (annual research budget, $13 million) grants its licensing function to the University of Idaho Research Foundation (UIRF), a self-supporting private organization. "We're run as a small company," said Richard Callahan, president. To keep its costs low, the UIRF uses some volunteer help. It hopes to break even next year.

"Tech transfer has been done very poorly in the past," observed Callahan, "largely because the university didn't see any obligation to commercialize patented ideas." One of his approaches is to involve faculty inventors in the negotiations with companies, so they can better understand the licensing process. "The program exists to keep our faculty," he said.

A major difference between the UW and WSU approach to technology transfer is WSU's informal efforts to establish a research park with the University of Idaho (the two campuses are just nine miles apart). The WSU Research Park, which opened its first building this year, was founded with nine-parts private money and one-part state funding. The park is attempting to lure tenants from throughout the United States and Japan, and is up against stiff competition. Only a few research parks based on or near university campuses have been in operation more than a decade, but about 80 are now in the operational or construction phase.

The WSU park, another experiment in technology transfer and a gamble on economic development, is noteworthy for its Innovation Center, designed to nurture infant companies born of WSU technology and to create new tenants. The center offers free business planning, patent assistance, and marketing and accounting assistance to qualified tenants from established firms. In addition, the center's first building contains 4,600 square feet of incubator space; qualified companies can lease 216 square feet for $135 a month.

Oregon Enters the Race

The University of Oregon (UO), in Eugene, self-characterized as a basic research institution when compared to industry-oriented Oregon State University (OSU), doesn't have a formal licensing office and has licensed two new inventions to date. OSU, which operates a one-person patent office, owns 30 U.S. and foreign patents and has 39 applications pending. OSU's licenses generated royalties of about $500,000 in 1986 (more than the UW brought in), but 90 percent of those royalties came from one invention—a process to make cheese starter, which is licensed to a Wisconsin manufacturer.

Change is on the way. OSU's patent office is expected to amend its name to reflect technology transfer after a new director is hired. And there are indications that the UO will eventually establish its own licensing office.

Meanwhile, the marketing gap is being filled by ASTI (Advanced Science and Technology Institute). Founded in 1984 with a grant from the Fred Meyer Institute, ASTI aims to increase the profile of university research faculty and promote industry-university interaction. "We have to reeducate the faculty to think in terms of application instead of publication," said Robert McQuate, ASTI executive director.

What role will tech transfer play in Oregon's economic development? The question is being debated. "Economic development is desirable, but my prime consideration is to serve the faculty members first," said McQuate. Although Oregon's major research institutions are not located near Portland, the state's commercial center, the geographical disadvantage is counterbalanced by the initiative the educational institutions have shown in reaching out to industry. There are, for example, plans to develop a 71-acre research park adjacent to the UO. The project, which involves commitments from the university, the city of Eugene, and the state of Oregon, is designed to assist in the diversification of the Eugene-Springfield economic base, provide opportunities for research interaction between the UO and industry, and offer new financial opportunities for the community, the university, and its faculty and students. ASTI's McQuate cautioned that expectations for Riverfront Research Park should be subdued, noting, "It'll take a while for this to become successful."

Although Oregon has lagged behind Washington in establishing tech transfer offices, it is progressive in other areas that involve transferring technologies. Portland Community College is working to set up telecommunication links among the state's colleges and universities. Moreover, the state has established what amounts to a $6 million venture capital fund designed to grow new companies in Oregon. The Oregon Resource & Technology Development Corporation is funded by state lottery revenues, and Oregon is also using lottery funds to build a number of trade and science buildings.

How Might Tech Transfer Be Improved?

Technology transfer is only one element in a comprehensive economic development program that must consider factors such as education, tax policy, the quality of the labor force, and the en-

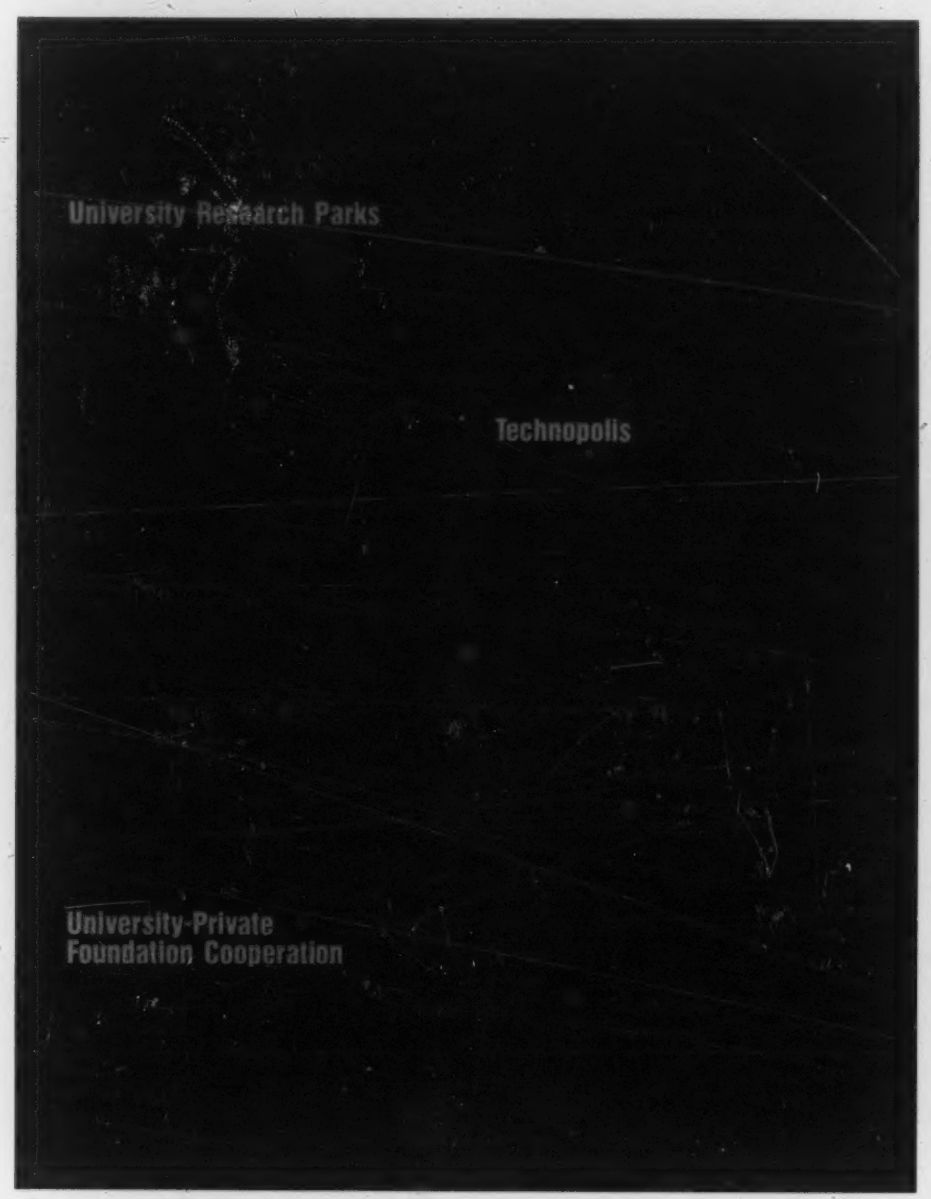
"If you look at who we should be licensing to, small companies should be at the top of the list," said MIT's Preston. "If you plant a lot of seeds, a few of them will grow and become very profitable."

vironment. With layoffs in Oregon's Silicon Forest during the computer slump and the inability of new technology to provide a quick panacea to the region's economic woes, "high tech" has earned a bad name in some circles. But a good breakthrough in technology, like the chain saw at the turn of the century, can provide long-term benefits. To improve technology transfer in the Pacific Northwest, universities and legislatures should consider a number of options:

Increase support for marketing-oriented technology transfer offices. The UW and MIT experiences demonstrate the positive results that improving the tech transfer effort has had on the number of invention disclosures and licenses. The UW has identified more than 100 technologies with licensing potential; additional qualified personnel at the Office of Technology Transfer might decrease the time it takes for those technologies to become commercial products. According to Kim Smith, former patent director at OSU and current director of Technology Transfer Services for the Oregon State System of Higher Education, "There's untapped potential."

Implement a "state-first" policy. The Washington Technology Center's Washington-first policy is ap-

North Carolina, whose major industries 20 years ago were tobacco, textiles, and furniture making, now boasts some of of the nation's most advanced research facilities in electronics, biotechnology, and other fields.



propriate for an institution whose research activities receive significant support from the state. Although most of the UW's research monies come from the federal government and national institutes, the home-state-first bias adopted by WTC could serve as a model for other offices or foundations. Stanford, MIT, and others have shown that licensing to carefully screened start-ups can eventually produce viable companies and the desired royalties. Because economic development serves a state's interests and a large university is in a better financial position to take risk than a small foundation, the region's public universities should consider playing a more innovative licensing role in working with local companies and creating new jobs. They should also encourage their business schools to train more students to become entrepreneurs and to coordinate efforts with licensing offices.

The licensing to start-ups option has become more viable in Washington with the founding of Trinus, L.P. Trinus is a seed investment fund, as opposed to a venture capital firm, interested in working with inventors to create companies in Washington State with sales of $50 million to $100 million within a five- to eight-year time frame. Trinus is capitalized at $7.1 million and keeps a watchful eye on the state's universities.

At present, there are no business incubator facilities at the UW, but the UW and the city of Seattle have established a task force to examine the possibility of establishing an incubator-type facility on a tract of city-owned land near the university. The idea might have seemed revolutionary five years ago, but it is appropriate to today's competitive environment.

Maintain support for the Washington Technology Center. WTC's future is partly in legislative hands. While the Washington legislature budgets for two-year periods, technology development requires much longer lead times, making WTC's programs susceptible to legislative myopia. WTC requested $10.25 million in operating funds from the state for 1987-89. It argued that the money was needed to maintain the momentum of the past three years and to attract more industry and federal support. At one time during the 1987 budget proceedings, WTC's funding request was trimmed to $3.6 million, but, as the legislature closed, a $7 million allocation was approved for 1987-89.

Increase coordination of campus-based technical resources. Technology transfer is more than commercialization; it includes the dissemination of technical knowledge that can assist management. "A multicampus statewide program of expanded and fully coordinated campus-based management and technical assistance to Washington firms, built upon resources and structures already present on many campuses, appears both feasible and desirable and not very costly," argues UW professor of public affairs William Zumeta.

Increase recruiting efforts for outstanding researchers and maintain or establish competitive compensation. The Northwest is considered an excellent fishing ground for quality university researchers, because salaries here are below those of other parts of the country. Two WTC researchers, including its associate director, resigned to take higher paying positions elsewhere, and others have hinted at leaving. Low salaries increase the probability that increased tech transfer efforts will fall short. "There is no substitute for the best people," said WTC's Stear.

Increase the amount of state investments allocated to venture capital funds actively seeking investments in the state. This idea is controversial because state pension funds are administered as a trust, and investments must meet certain fiduciary standards for risk. Interestingly, the fastest growing high-tech corridor today is Automation Alley, a 40-mile strip from Detroit west to Ann Arbor, and Michigan has put aside five percent of its $10 billion public employees' pension funds for investing in higher risk ventures by local entrepreneurs. Ohio has set aside $500 million for investments in venture capital.

About two percent of Washington's pension monies are allocated to venture funds and $60 million is managed by three venture firms located in Seattle. Nationwide, Washington has $270 million committed to venture capital funds. John Hitchman, director of the State Investment Board, suggested that if the state wishes to establish public policy that channels more money to start-up firms, then it should use public funds, not trust funds. That idea might require an amendment to Washington's constitution, which prohibits the state from lending credit. Like Oregon, Washington might consider the use of lottery funds to promote the commercialization of university technology.

Long-Term Experiments

In recent years, legislatures have approved new initiatives for economic development, while academia has sought to play a more active role in the commercialization of new technologies. At times, these efforts have been linked with promising initiatives to increase the flow of technical knowledge from state universities to the private sector. But, because these efforts are seen as long-term experiments, support for technology transfer in the Northwest has sometimes been tentative. Meanwhile, others, more certain of their course and destination, plow ahead.

If creating Northwest businesses based on Northwest technology is a societal goal, then academic, business, and political vision is needed. The final results may seem distant, but world-wide economic competition isn't distant at all.

Craig Justice, who earned his MBA from the University of Washington, is working for a trading company in Japan.

With layoffs in Oregon's Silicon Forest during the computer slump and the inability of new technology to provide a quick panacea to the region's economic woes, "high-tech" has earned a bad name in some circles.

REGION WATCH

Economic Developments in the Pacific Northwest

The national economy has grown at respectable real rates throughout the first three quarters of 1987: 4.4 percent in the first quarter, 2.5 percent in the second, and 4.1 percent in the third. Imports have grown less strongly in each of these quarters, and exports have grown, albeit at a slower pace in the third quarter than in the second. Inflation continues at a modest rate, as shown by the 2.4 percent increase in the Implicit Price Deflator for GNP in the third quarter. National and regional unemployment rates are at their lowest levels since the last recession. Prior to October 19th, most forecasters were calling for continued expansion through 1988 and possibly into 1989.

A strong economy...

Despite the favorable economic situation, the stock market reversed its strong upward trend in late summer. On October 19th, the Dow Jones average plunged 508 points. That 22 percent drop raised many doubts about the future of both the economy and the stock market. Pacific Northwest stocks also plummeted; the *Pacific Northwest Executive* composite index fell 12.3 percent on Monday, October 19th, and an additional 4.2 percent the following day, when the broader markets staged a brief rally. Since then the markets have regained only a portion of their losses and remain highly unstable.

But the stock market crashed

The combination of a strong economy and a stock market crash of historic proportions puzzles many observers. How could the market overlook the underlying strength of the economy? Should computerized program trading be blamed for excessive volatility of the market and, perhaps, for precipitating the crash? Does the worldwide character of the crash imply a sudden loss of confidence in the U.S. economy by foreign investors? Is this the beginning of a bear market and the harbinger of a recession?

While we cannot presume to understand the full significance of October's events, we do believe that the underlying strength of the economy has not been fundamentally shaken. To be sure, the loss of more than $500 billion of wealth may result in a dampening of consumer confidence. Foreign investors may be less inclined to invest their funds in the stock market. On the other side of the ledger, the crash is leading to some offsetting measures that may keep the expansion going. The Federal Reserve acted quickly to increase liquidity after the crash, reversing its policy of monetary restraints. In an unusual display of international monetary cooperation, central banks in other nations also lowered interest rates. The White House and Congress, too, seem more willing to address the federal deficit problem. The equivalent of an earthquake in the stock market may have increased the odds of a recession, but the tremor may have been, in essence, a reaction to a greatly overvalued market. The fundamentals of the economy in October 1986, when stock prices were higher than they are at this writing, were certainly no less favorable than they appear today.

In an apparent response to the turbulent financial markets, our 17-member forecast panel projects a slowing of real GNP growth from 2.7 percent in 1987 to 2.0 percent in 1988, along with an increase in the inflation rate, as measured by the Implicit Price Deflator, from 3.4 percent to 4.0 percent (Table 1). The panel's 1989 forecast calls for a pickup in both variables: 2.3 percent for real GNP and 4.5 percent for the Implicit Price Deflator. While several of the panel members see the stock market crash as increasing the probability of a recession and several nominate financial and monetary factors as likely causes of a next recession, only two see the stock market crash as precipitating an immediate 1988 recession.

No 1988 recession foreseen

Projections for nominal personal income show an increase in the growth rate from 1987 to 1988 in Washington, a small decrease in Oregon, and a larger drop in Idaho. On employment variables, the median panel forecast is for decreases in the rate of growth from 1987 to 1988 throughout the region. However, all of these projections are for positive rates of growth, consistent with the idea that no recession is likely during 1988.

The 1989 median forecasts are less consistent. Personal income growth rates are projected to hold steady relative to 1988 in Washington, even though a nonagricultural employment growth rate increase will be

Table 1: Panel Forecasts
median annual percent changes

	REAL GROSS NATIONAL PRODUCT	IMPLICIT PRICE DEFLATOR
1986 actual	2.5	2.7
1987	2.7	3.4
1988	2.0	4.0
1989	2.3	4.5

	NOMINAL PERSONAL INCOME	NONAGRICULTURAL EMPLOYMENT	MANUFACTURING EMPLOYMENT
WASHINGTON			
1986 actual	5.7	3.5	2.9
1987	5.6	3.3	2.6
1988	6.0	2.1	2.4
1989	6.0	2.2	2.1
OREGON			
1986 actual	5.1	2.3	−1.3
1987	5.6	3.0	1.7
1988	5.5	2.3	1.5
1989	6.0	2.0	1.5
IDAHO			
1986 actual	2.6	−0.4	−5.4
1987	3.5	1.9	0.3
1988	3.0	0.5	0.5
1989	4.0	0.6	0.4

offset by a decline in the growth of generally higher-paying manufacturing jobs. A pickup in the personal income growth rate in Oregon from 1988 to 1989 is paired with declining growth rates in both employment categories in Oregon. A similar income increase in Idaho is matched with a much smaller increase in nonagricultural employment growth and a decline in manufacturing employment growth. The methodology of reporting median forecasts from a panel does not guarantee consistent forecasts, even if the individual contributions are internally consistent. Another interpretation is that 1989 is still a long way off, and forecasts are likely to be revised significantly in the next several quarters.

Free trade agreement

In October, the trade negotiators of the United States and Canada agreed in principle to a free trade agreement. All tariffs inhibiting trade between these two countries are to be eliminated within 10 years, and many nontariff barriers to trade will be removed as well. The final agreement is due to be signed by the two countries' leaders early in January. Both houses of the United States Congress must approve or reject the document without amendment within 90 days of submission. The Canadian cabinet has the power to sign the agreement, but a formal vote of approval is expected in the Parliament.

If both sides approve the agreement, several Pacific Northwest industries could face increased competition. The shake and shingle tariff that has protected United States manufacturers from Canadian competition will be phased out. However, the agreement on softwood lumber exports by Canada has been left untouched. Plywood manufacturers object to the removal of tariffs on Canadian imports without offsetting removal of all nontariff barriers in Canadian markets. The Maritime Engineers Association fears that the agreement will reduce job opportunities for its members despite the unaltered protection of the Jones Act.

Despite these negative impacts, consumers on both sides of the border should benefit from the removal of tariffs. Firms in the United States will gain free and nondiscriminatory access to a market as big as that of California. Rules regarding the financial sector will be liberalized so that firms from one country can invest in the other. The Bonneville Power Administration and B.C. Hydro will continue their negotiations on access to BPA's intertie with the Southwest and other outstanding issues. In addition, the agreement is supposed to "ensure the freest possible bilateral trade in energy," including both U.S. access to Canadian energy sources and Canadian access to markets in the United States.

Rather exuberant reports concerning employment gains have been coming out of the Employment Division in Salem, Oregon in recent months. Their September report states that "Oregon's economic performance in August mirrored the continued strength of the national economy," and "most Oregonians are probably hoping that the current moderate-growth, low-inflation economic climate can be maintained well into the future." Washington's Department of Employment Security has been reporting strong growth as well, with the unemployment roles falling by 22,000 during 1987 (July to July), and August employment levels increasing 3.6 percent over those of August 1986. Just how robust are the employment gains in the Pacific Northwest relative to the nation as a whole?

Employment growth since 1979

For an interesting perspective on this question, compare employment gains since 1979 (the previous low point in the United States unemployment rate) in each Pacific Northwest state with that of the nation (Figure 1). In Washington, most industries have grown at rates above or very close to the national rate of expansion. Significant exceptions to this pattern are lumber and wood products, which shrank more in Washington than in the nation, and manufacturing and farm employment, which declined less rapidly in the state than in the nation. Services employment growth in Washington barely matched the national growth rate.

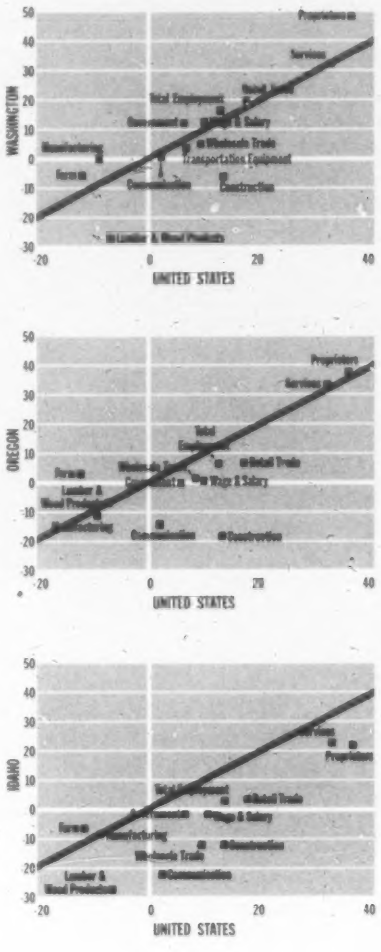
While Washington employment has grown above the national rate, Oregon and Idaho have expanded less rapidly since 1979. As shown in the middle and bottom panels of Figure 1, most of the points fall below the diagonal. Farm employment is an exception; it fell less rapidly in Oregon and Idaho than in the nation. The lumber and wood products category is interesting in that it declined at exactly the national rate in Oregon, but faster than the national rate in Idaho. Because this sector is an important part of the economic base in both states, declines at or exceeding the national rate have had devastating impacts.

Shipbuilding, once a major manufacturing employer in Washington, is rapidly waning. Due to a decline in business and high labor costs, Lockheed's shipyard in Seattle is for sale and will close in the near future unless it is sold. Todd Pacific Shipyard Corporation, with about 830 employees in its Seattle yard and 1,425 in other locations, filed for Chapter 11 bankruptcy in August. Tacoma Boat has been in bankruptcy court for some time, as has Marine Power and Equipment.

Shipbuilding drifts south

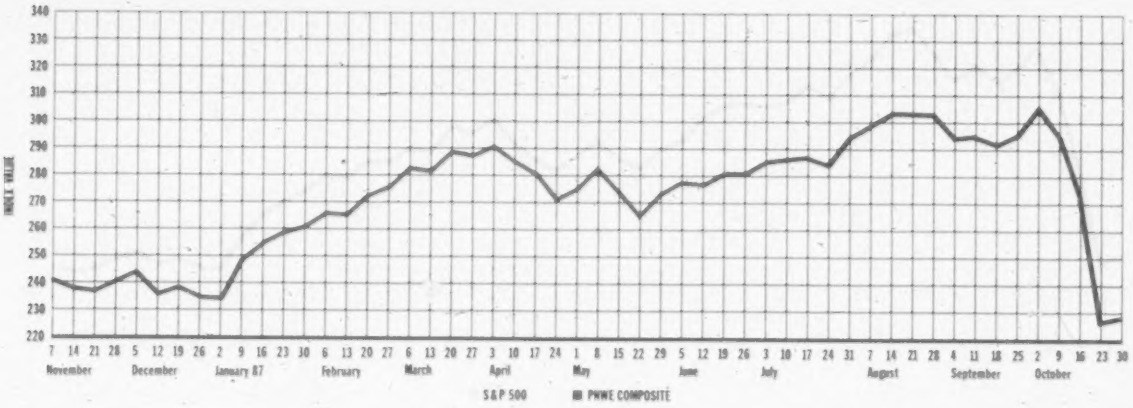
While Washington's shipyards are in trouble, conditions in Oregon are improving. Employment has expanded from 6,800 in July 1985 to 10,600 in July 1987. Portland shipyards may be getting some of the business the Seattle firms lost due to high costs. One of Portland's firms, Northwest Marine Iron Works, has emerged from a Chapter 11 reorganization; its president has indicated that the decline of the industry in Seattle should make it easier for his firm and others in Portland to win contracts.

Figure 1: Growth of Employment
percent change, 1979-86



REGION WATCH

S&P 500 and the PNWE Index, November 7, 1986–October 30, 1987



The Pacific Northwest 63: Firms Included in the Pacific Northwest Executive Stock Index

■ Large company (over $1 billion in aggregate value)
□ Small company (under $50 million in aggregate value)

Manufacturing
The Boeing Co. ■
Boise Cascade Corp. ■
Bohemia, Inc.–
Hecla Mining Co.
Linden, Inc. □
Longview Fibre Co.
Louisiana-Pacific Corp. ■
Morrison Knudsen Corp.
NIKE, Inc.
PACCAR, Inc.
Penwest, Ltd.
(2 for 1 stock split 7-17-87)
Pope & Talbot, Inc.
Precision Castparts Corp.
(2 for 1 stock split 2-27-87)
Timberland Industries, Inc. □
Trus Joist Corp.
Univar Corp.
Weyerhaeuser Co. ■
Willamette Industries, Inc.

Technology
Data I/O Corp.
Electro Scientific Industries, Inc. □
Floating Point Systems, Inc. □
Flow Systems, Inc. □
John Fluke Mfg. Co., Inc.
ISC Systems Corp.
Immunex Corp.
Integrated Circuits Inc. □
Intermec Corp.
Key Tronic Corp.
Mentor Graphics Corp.
Microsoft Corp. ■
(2 for 1 stock split 9-21-87)
Tektronix, Inc.
(2 for 1 stock split 1-26-87)

Utilities
Cascade Natural Gas Corp. □
Idaho Power Co.
Northwest Natural Gas Co.
PacifiCorp ■
Pacific Telecom, Inc.
Portland General Electric Co. ■
Puget Sound Power & Light Co. ■
Washington Energy Co.
Washington Water Power Co.

Retail
Albertson's, Inc. ■
(2 for 1 stock split 10-5-87)
GranTree Corp. □
Nordstrom, Inc. ■
(2 for 1 stock split 6-30-87)
Pay 'N Pak Stores, Inc.
Pay-N-Save Inc.
Weisfield's, Inc.

Finance
First Farwest Corp. □
Moore Financial Group, Inc.
Old National Bancorporation
(Dropped 1-9-87, merged with U.S.Bancorp)
Pacific First Financial Corp.
Peoples Bancorporation
Puget Sound Bancorp
Rainier Bancorporation
(Dropped 3-13-87, merged with Security Pacific Corp)
Safeco Corp. ■
United Savings Bank
(Dropped 3-16-87, merged with Rainier Bancorporation)
U.S. Bancorp
University Federal Savings Bank □
(Added 1-9-87)
Washington Mutual Savings Bank
(Added 3-13-87)

Other
Airborne Freight Corp
Alaska Air Group, Inc.
Burlington Northern Inc. ■
Coeur D'Alene Mines Corp.
International King's Table, Inc. □
Northern Air Freight, Inc. □
Sea Galley Stores, Inc. □
Thousand Trails, Inc. □

Index Values*

LAST FRIDAY OF	PNWE COMPOSITE	SMALL FIRMS	LARGE FIRMS	MANUFACTURING	TECHNOLOGY	UTILITIES	RETAIL FINANCE AND OTHERS
NOVEMBER 1986	240.55	316.58	241.11	238.09	231.63	257.59	235.54
DECEMBER 1986	234.36	337.84	234.59	239.09	223.23	247.44	221.15
JANUARY 1987	260.12	368.42	251.99	266.74	285.37	261.00	239.52
FEBRUARY 1987	276.29	401.15	266.71	284.67	302.00	254.23	265.12
MARCH 1987	288.05	425.07	272.71	301.67	315.47	252.99	275.06
APRIL 1987	271.79	402.84	252.63	282.37	315.19	235.24	259.71
MAY 1987	273.66	449.12	255.45	267.54	351.24	236.50	278.50
JUNE 1987	280.22	537.25	262.00	276.39	345.57	241.90	285.75
JULY 1987	294.54	572.46	282.06	294.45	327.10	237.45	314.78
AUGUST 1987	303.34	588.44	287.37	305.60	345.36	248.10	315.66
SEPTEMBER 1987	296.36	546.44	274.56	299.16	356.82	238.36	303.68
OCTOBER 1987	229.13	432.27	218.10	215.87	276.22	223.20	237.69

*All PNWE indexes set equal to the S&P 500 index of 210.88 on January 3, 1986

Does the Washington Economy Lead the National Business Cycle?

by Bret Bertolin and Chang Mook Sohn

According to the National Bureau of Economic Research, there have been eight recessions in the United States since the end of World War II. For each national recession, there has been a corresponding decline in Washington economic activity. There are, however, significant differences between local experience and national trends in the timing, duration, and severity of recessions (Table 1). For the purposes of this discussion, business cycle peaks and troughs are defined in terms of civilian nonfarm employment.

Timing, Duration, and Change in Employment

Washington State nonfarm employment begins to decline, on average, 2.5 months before U.S. employment. In fact, only once, in the 1957-58 recession, did the nation enter the recession first. The timing difference has been particularly extreme in two cases. Washington State nonfarm employment peaked in May 1969, 10 months before the corresponding national turning point. Aerospace employment actually topped out 10 months earlier—in July 1968. Between July 1968 and May 1969, employment in this sector declined by 13,000. Continued heavy losses dragged the state's economy into an early recession.

The most recent recession also hit Washington well before the nation: employment peaked in January 1981, six months before the U.S. downturn. In this case it appears that the lumber and wood products industry was the principal culprit. Employment in this sector fell by 2,300 from January to July 1981.

Washington's recessions have also tended to last longer than the corresponding U.S. downturns. The average recession lasts 13.5 months in Washington, compared to 10.8 months for the United States. The state has experienced a shorter recession than the nation only twice in the postwar period—in 1957-58 and in 1974-75. In both cases the difference was three months or less. In contrast, the duration of Washington's recessions exceeded that of U.S. recessions by more than three months on four occasions.

The largest differences in duration were in the 1969-70 and 1981-83 declines, which began earlier in Washington State than in the United States as a whole and ended at about the same time. Generally, the difference in the ends of recessions has not been greater than three months, and Washington recessions, on average, end only 10 days later than U.S. recessions.

Washington's recessions are generally more severe than the U.S. average, according to the percent change in total nonfarm employment from recession peak to trough. The average decline for employment in Washington was 4.0 percent compared to 3.0 percent for the United States. Once again, Washington's recessions were less severe than U.S. recessions on only two of eight occasions.

Not surprisingly, the biggest discrepancy between the U.S. and Washington employment declines occurred in the 1969-70 recession. Washington's employment plummeted 6.4 percent from May 1969 to December 1970, while national employment declined a relatively mild 1.5 percent from March to November 1970. Conversely, the state emerged virtually unscathed from the recession of the mid-1970s: Washington employment declined 0.7 percent, while U.S. employment fell 2.9 percent.

Explanatory Factors

Though the Washington economy generally follows the U.S. business cycle, recessions at the state level usually begin sooner, last longer, and are more severe. All recessions in recent years have been preceded by a tightening of national monetary policy. Because Washington's economy is especially sensitive to interest rates and credit availability (due to its reliance on forest products and other capital goods), these results are not surprising. The aerospace sector is an additional wild card for the Washington economy: reductions in aerospace employment have led to early and severe recessions in Washington or recessions at the state level without a corresponding U.S. decline. Given that both aerospace and wood products have declined in relative importance, the Washington economy should be less extreme in its cyclical swings than in the past.

Table 1: Postwar Recessions

WASHINGTON STATE				UNITED STATES				LAG*
PEAK	TROUGH	DURATION (MONTHS)	EMPLOYMENT DECLINE	PEAK	TROUGH	DURATION (MONTHS)	EMPLOYMENT DECLINE	
1948:07	1950:01	18	7.7%	1948:09	1949:10	13	5.2%	−2
1953:02	1954:08	18	5.3%	1953:04	1954:08	14	3.5%	−4
1957:06	1958:05	11	4.5%	1957:03	1958:5	14	4.3%	3
1960:04	1961:02	10	1.9%	1960:04	1961:02	10	2.2%	0
1969:05	1970:12	19	6.4%	1970:03	1970:11	8	1.5%	−10
1974:10	1975:02	4	0.7%	1974:10	1975:04	6	2.9%	0
1980:02	1980:06	4	1.6%	1980:03	1980:07	4	1.4%	−1
1981:01	1983:01	24	4.2%	1981:07	1982:12	17	3.1%	−6
AVERAGE		13.5	4.0%			10.8	3.0%	−2.5

*Lag is the month of the onset of the Washington recession minus the month of the onset of the U.S. recession.

Bret Bertolin is a forecast specialist with the Office of the Forecast Council. Chang Mook Sohn is the executive director.

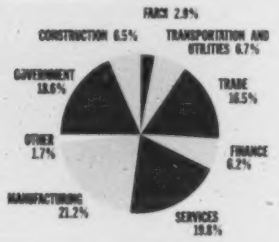
REGION WATCH

MAJOR VARIABLES, 1986

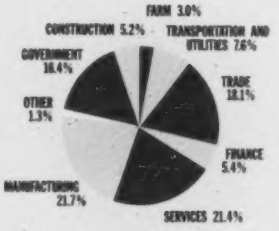
	WA	OR	ID
Total Personal Income *(in millions $)*	66,978	35,955	11,250
Population *(in thousands)*	4,462	2,698	1,002
Personal Income Per Capita *(in $)*	15,009	13,328	11,223
Rank Among States			
Personal Income	17	31	43
Personal Income Per Capita	14	30	44

SOURCES OF PERSONAL INCOME, 1986

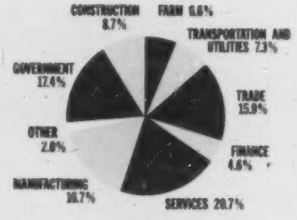
WASHINGTON



OREGON



IDAHO



NOTES:

1. Bureau of Economic Analysis, U.S. Department of Commerce
2. Transfer payments are defined as payments to individuals for which they do not render current services.
3. The percent change is calculated on a quarter to quarter basis.
4. Both Vermont and Iowa rank 29th.

TOTAL PERSONAL INCOME
In millions $

YEAR	WA	OR	ID
1940	1,135	658	240
1941	1,535	870	298
1942	2,257	1,251	438
1943	2,941	1,683	588
1944	3,234	1,723	560
1945	3,141	1,696	553
1946	3,188	1,837	609
1947	3,313	2,035	063
1948	3,633	2,287	737
1949	3,631	2,283	725
1950	4,063	2,514	770
1951	4,477	2,800	872
1952	4,757	2,900	953
1953	5,013	3,019	912
1954	5,131	2,979	920
1955	5,481	3,217	969
1956	5,868	3,440	1,063
1957	6,018	3,435	1,120
1958	6,156	3,519	1,144
1959	6,539	3,812	1,208
1960	6,772	3,930	1,236
1961	7,093	4,061	1,304
1962	7,634	4,306	1,394
1963	7,830	4,539	1,424
1964	8,193	4,881	1,464
1965	8,867	5,329	1,679
1966	10,068	5,763	1,708
1967	10,995	6,104	1,814
1968	12,220	6,642	1,929
1969	13,593	7,524	2,260
1970	14,234	8,169	2,486
1971	14,961	8,920	2,723
1972	16,163	10,006	3,097
1973	18,300	11,342	3,635
1974	20,722	12,816	4,205
1975	23,260	14,070	4,548
1976	26,074	16,056	5,147
1977	29,157	18,079	5,672
1978	34,255	20,819	6,578
1979	39,491	23,653	7,288
1980	44,569	26,055	8,128
1981	49,269	27,884	8,942
1982	51,410	28,275	9,070
1983	54,587	29,984	9,777
1984	58,341	32,246	10,356
1985	62,289	34,075	10,901
1986	66,978	35,955	11,250

PERSONAL INCOME, 1986
In millions $

	WA	OR	ID
TOTAL PERSONAL INCOME BY PLACE OF RESIDENCE	**66,978**	**35,955**	**11,250**
Nonfarm Personal Income	65,594	35,190	10,717
Farm Personal Income	1,384	765	533
Population (in thousands)	4,462	2,698	1,002
Per Capita Personal Income (in dollars)	15,009	13,328	11,223
DERIVATION OF TOTAL PERSONAL INCOME			
Earnings by Place of Work	47,924	25,435	8,049
Less: Personal Contribution for Social Insurance	2,830	1,679	535
Plus: Adjustment for Residence	461	(248)	72
Equals: Net Earnings by Place of Residence	45,555	23,508	7,586
Plus: Dividends, Interest, and Rent	11,158	6,514	1,907
Plus: Transfer Payments	10,266	5,933	1,757
COMPONENTS OF EARNINGS BY PLACE OF WORK			
Wages and Salaries	34,736	18,924	5,935
Other Labor Income	3,434	1,902	544
Proprietors' Income	5,754	3,600	1,570
Farm	1,073	753	383
Nonfarm	4,681	3,036	1,187
EARNINGS BY INDUSTRY			
Farm	1,384	765	533
Nonfarm	46,540	24,670	7,516

NONFARM EARNINGS BY INDUSTRY, 1986
In millions $

	WA	OR	ID
[illegible]			
Agricultural Services	228	115	74
Forestry, Fisheries, and Other	371	111	17
[illegible]			
[illegible]			
[illegible]			
Nondurable Goods	2,006	1,350	630
Food and Kindred Products	731	490	330
Paper and Allied Products	859	368	73
Printing and Publishing	453	206	72
Chemicals and Allied Products	442	62	125
Durable Goods	7,544	4,365	737
Lumber and Wood Products	1,087	1,002	402
Machinery, Except Electrical	525	459	145
Primary Metal Industries	452	303	2
Transportation Equipment	4,082	195	9
[illegible]			
Railroads, Trucking, Water, and Other	2,015	802	330
Communication	885	422	136
Electric, Gas, and Sanitary Services	322	171	122
[illegible]			
[illegible]			
[illegible]			
Banking	1,300	505	150
Other Finance, Insurance, and Real Estate	1,852	874	212
[illegible]			
Business Services	1,818	902	404
Health Services	3,000	1,916	488
[illegible]			
[illegible]			
[illegible]			
[illegible]			

PERSONAL TAX AND NONTAX PAYMENTS, 1986
In millions $

	WA	OR	ID
Individual Income Tax (net of refunds)	6,681	4,955	750
Individual Income Taxes (gross)	7,974	5,585	950
Less: Refunds	1,293	630	200
Fiduciary Income, Estate and Gift, Nontax	215	111	28
Individual Income Taxes	0	1,222	263
Death and Gift Taxes	18	37	2
Motor Vehicle Taxes	90	50	26
Other Taxes	23	19	11
Nontax Payments	439	321	83
Other Local Taxes	22	23	1
Local Nontax Payments	540	281	188
Less: Total Personal Tax and Nontax Payments	8,099	7,819	1,354
Equals: Disposable Personal Income	58,879	28,936	9,896

TRANSFER PAYMENTS, 1983[2]
In millions $

	WA	OR	ID
Old-Age, Survivors and Disability Insurance	3,561	2,438	741
Medical Insurance Payments	1,865	1,120	301
Aid to Families with Dependent Children	391	123	20
Food Stamps	152	141	36

PERCENT CHANGES IN[3] PERSONAL INCOME

YEAR	QTR	WA	OR	ID
1982	1	0.9	0.1	−0.4
	2	1.2	0.2	1.5
	3	0.6	0.9	0.9
	4	1.8	1.5	3.4
1983	1	0.7	1.2	−0.1
	2	2.4	2.3	3.1
	3	0.8	1.1	0.9
	4	5.0	3.4	6.0
1984	1	−0.1	1.7	−1.7
	2	1.1	1.0	0.5
	3	2.1	1.7	1.6
	4	1.3	1.5	3.1
1985	1	2.2	1.6	0.9
	2	1.5	1.1	0.3
	3	0.9	1.0	0.2
	4	1.6	1.7	2.9
1986	1	3.3	1.1	−2.1
	2	1.4	1.8	2.5
	3	0.6	1.2	1.7
	4	2.7	1.0	1.3
1987	1	0.1	1.4	−0.6
	2	2.2	2.4	2.2

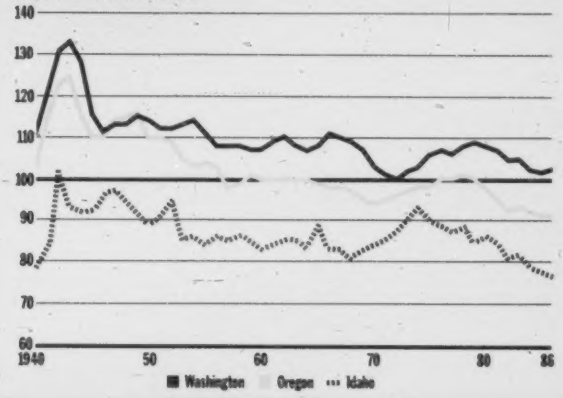
An Explanation of Personal Income

State personal income accounts constitute the single most important source of information about the income conditions of a state's residents. Used in conjunction with other statistics such as population, employment, and price changes, personal income data not only form the basis for determining people's well-being on a geographic basis, but are useful in making economic forecasts, assessing market opportunities, and determining the allocation of payments for governmental programs. Personal income data are an indispensable tool for analyzing regional economic change.

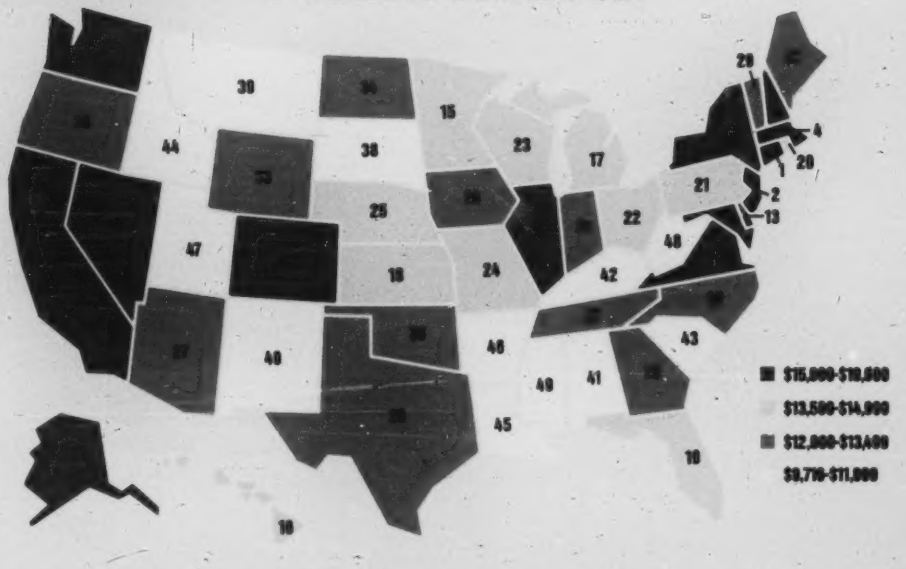
A state's personal income is defined as the income received by, or on behalf of, its *residents*, excluding those who are temporarily working abroad. It consists of income received by individuals from all sources: wages and salaries of employees, net income of proprietors, dividends, net interest, rent, and transfer payments. Personal income is a description of the income people received, as distinct from Gross National Product, which measures the value of goods and services produced.

The Bureau of Economic Analysis (BEA), a section of the U.S. Department of Commerce, estimates personal income based on data supplied by the employment security departments of each state and the other governmental agencies. The BEA reports national personal income estimates monthly, while it publishes estimates for states quarterly with a lag of about five months. These estimates are refined as more complete data become available. The BEA makes county estimates on an annual basis, with publication lagging more than a year. Although the quality of data varies, the methods of estimation assure consistency across states and with national aggregates.

PER CAPITA PERSONAL INCOME
as percent of U.S. 1948-1986



PERSONAL INCOME PER CAPITA AND RANK, 1986[4]



The Oil Industry in the Pacific Northwest

Electric power, the Bonneville Power Administration, and publicly owned utilities often dominate discussions of energy issues in the Pacific Northwest. Yet, oil and natural gas, including petroleum and its derivatives, are crucial to the smooth functioning of our regional economy. Petroleum refining, transportation, and marketing activities have major impacts on the regional economy, and issues regarding the development of these activities are likely to become important public policy questions in coming years.

Physical Aspects of the Industry

The oil industry in the Pacific Northwest includes refineries, distribution, and marketing operations; there is very little oil exploration and no oil production at present. Offshore exploration for oil and gas is likely in the future, and some exploration, primarily for natural gas, has taken place east of the Cascades. There is one small gas field in production in Oregon.

Refineries are a major manufacturing industry on the west side of the Cascades. Large facilities in Anacortes, Ferndale, and Tacoma receive crude oil via tankers from Alaska (and, to some extent, Indonesia and the Middle East) and the Trans-Mountain Pipeline from Canada.

Washington's refineries were built in the 1950s, at a time when the principal source for oil was Canada. In the early 1970s, the National Energy Board of Canada raised its prices sharply. When the Trans-Alaskan Pipeline was completed in 1977, the refineries switched to Alaskan oil, carrying out major investment programs to reconfigure their plants to the high-sulfur crude. At present, almost all crude inputs to Puget Sound refineries come in by tankers from Prudhoe Bay, Alaska. Only 6 percent of the crude oil total arrives via pipeline from Canada (Figure 1), and smaller amounts come by tankers from Indonesia or other foreign sources.

Crude oil is refined into gasoline, jet fuel, diesel, stove oil, and a variety of residual products. About 56 percent of these products go out through pipelines to markets in Washington and Oregon. The Olympic Pipeline transports oil products from Ferndale to Seattle, Tacoma, Olympia, Vancouver, and Portland. From Vancouver, these products are transported by barge up the Columbia to the Tri-Cities. The remaining 44 percent of the refineries' output is distributed by barge and truck to various markets.

Independent oil dealers, who do not have refineries in the state, import refined products into the Puget Sound via tankers and barges. This source of petroleum products is relatively small (Figure 1) and has declined in the last eight years.

Eastern Washington is primarily dependent upon out-of-state sources of petroleum. Pipelines from Utah pump Chevron oil products to the Tri-Cities and Spokane. Spokane is also served by the Yellowstone Pipeline, which brings finished products in from Montana and Wyoming refineries. Markets in eastern Washington also receive petroleum transported by barges that move up the Columbia River and by tanker trucks. The amount of finished products that is sent via pipeline has decreased, while barge and truck transport has increased dramatically in the last eight years.

Table 1: Oil Industry Capital Investments in Oregon and Washington
in millions $

OREGON	1981	1983	1985
Exploration, Development, and Production	15	30	55
Manufacturing	50	50	50
Marketing	210	200	195
Other	35	25	69
TOTAL	310	305	369
WASHINGTON	**1981**	**1983**	**1985**
Exploration, Development, and Production	25	25	51
Manufacturing	873	1,200	1,200
Marketing	285	285	315
Other	100	150	553
TOTAL	1,285	1,660	2,119

SOURCE: Western Oil and Gas Association

Out-of-state markets are almost as big as Washington markets for Puget Sound refineries. Exports of finished products to out-of-state points have increased more rapidly in the last eight years than sales to in-state markets. Shipments of finished products by pipeline to points within Washington increased 27 percent, and shipments by tankers, barges, and trucks increased 31 percent. In contrast, shipments to out-of-state markets other than Oregon rose 88 percent. Exports to Oregon rose only 10 percent.

Petroleum is used as a fuel for space or process heating and for transportation. The airlines, railroads, and trucking companies are all heavily dependent upon oil products, and so are pulp and paper manufacturers, agriculture, and the construction industry. Petroleum products are a major cost to households, which use them both for space heating and transportation. Total consumption per capita in all sectors of the economy in Washington was 21.9 barrels in 1982, somewhat less than the national average of 23.7 barrels.

Economic Dimensions

In 1982 oil refineries imported $2.5 billion of crude oil from Alaska. These imports were combined with purchases of $144 million from Washington businesses to generate $512 million of industry value added and $4.5 billion of product shipments (valued at the refinery). While a number of sectors of the economy have a bigger impact in terms of employees or inputs purchased within the state, the petroleum sector is a major industry in terms of value added. Petroleum refining's value added in Washington is exceeded only by two manufacturing sectors: aerospace and shipbuilding.

A broader perspective on the oil industry, including its marketing operations in Washington, is available in data from the Western Oil and Gas Association (WOGA), whose members control about 90 percent of the refining capacity in Washington. Most of the WOGA members' accumulated, undepreciated investment in Washington (Table 1) is in the manufacturing sector, i.e., refining; slightly less than half is spread across marketing, exploration, and other miscellaneous activities, including transportation. Oil industry investment in Oregon, which is only 17 percent as large as that in Washington, is, for the most part, in the marketing segment.

WOGA data on total employment and salary payments in all industry segments show that employment in Washington to-

taled 3,500 persons in 1985, a decline from 4,300 in 1981. According to the Washington Employment Security Department, refinery employment in 1985 averaged about 1,870, and bulk stations and terminals employed 1,660. In Oregon, total employment reported by WOGA stood at 850 in 1985, a decline from 1,500 in 1981. However, Oregon's Employment Division reports employment at petroleum bulk stations and terminals at an average level of 1,649 in 1985. WOGA evidently represents a smaller percentage of the petroleum distribution industry in Oregon than it does in Washington, a factor that makes the WOGA salary and investment data less representative of the industry as a whole in Oregon.

The employment declines over time in both states are due to extensive restructuring of the industry. In Washington the decline is due, in part, to the emergence of self-serve gas stations, and both states have experienced a decrease in the total number of service stations, as well as internal consolidations and mergers of oil companies.

The average salary of an employee of the WOGA companies climbed from $23,721 in 1981 to $32,857 in 1985 in Washington, while Oregon's average industry worker earned $19,333 in 1981 and $30,588 in 1985. The higher salaries in Washington may be the result of the refinery operations or simply the presence of a larger organization that carries with it an overhead of high-salaried managers.

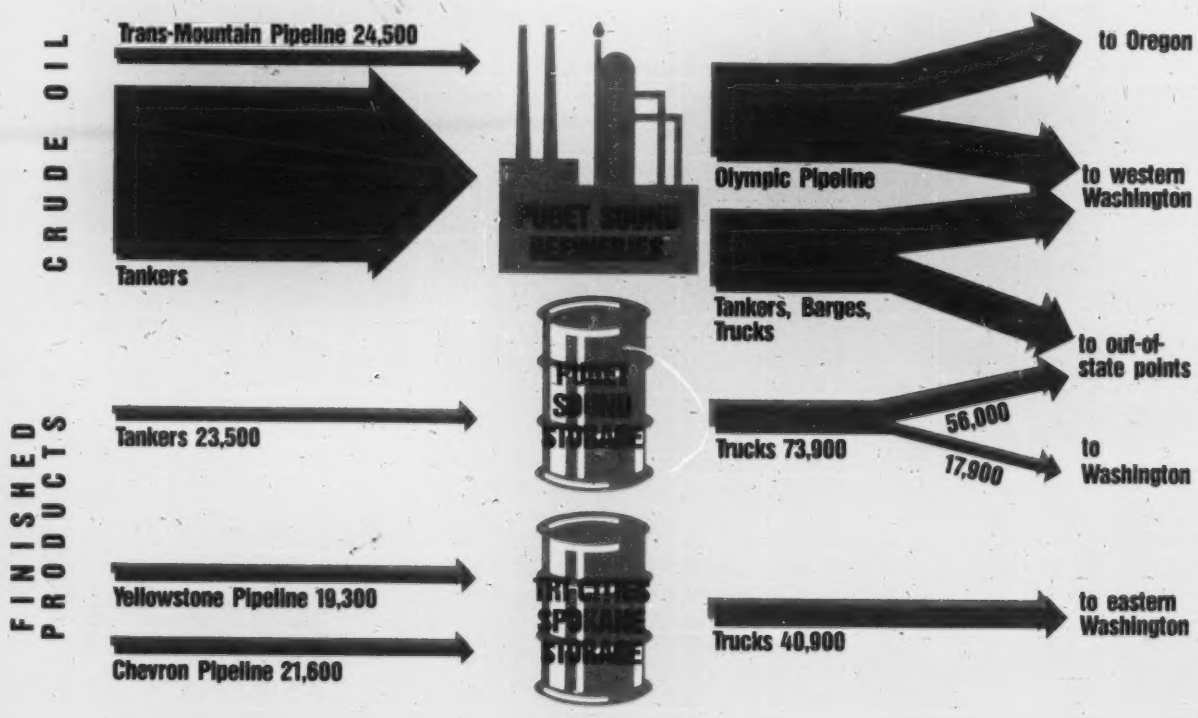
Who Should Get Alaskan Crude?

In the legislation authorizing the Trans-Alaska Pipeline, Congress prohibited the export of North Slope crude oil. This is an economically inefficient arrangement; total transportation costs would be lower if North Slope oil could be sold in Japan, and Middle Eastern or Canadian oil substituted for use in West Coast refineries. Yet concern over the security of oil supplies in the era following the Arab oil embargo and the emergence of the OPEC cartel led to the 1973 policy decision to restrict North Slope crude to U.S. markets only. The current debate over leasing protected wilderness in Alaska for oil exploration has renewed the controversy over the ban on the exportation of Alaskan crude.

The refineries in Washington were built to provide a regional market with a spectrum of refined petroleum products. They will continue to do so regardless of their source of crude oil. Ships could supply these refineries with crude from the Middle East and Southeast Asia. Pipelines could also be used to bring in either finished products or crude oil from Canada to meet regional demand.

The refinery supply issue is intertwined in national energy policy matters as well as regional environmental and economic issues. Investments might be necessary to reconfigure the refineries to process low-sulfur oil, but that would not be an insurmountable obstacle. A renewed debate over tanker size within Puget Sound could also result if a switch were made to Middle Eastern crude. Tankers are currently restricted to 125,000 deadweight tons east of Port Angeles. Supertankers, ranging from two to four times the 125,000-ton limit, are restricted to ports on the Olympic Peninsula, ruling them out to supply existing refineries unless a pipeline were built under or around

Figure 1: Crude Oil and Product Movements in Washington, 1986
barrels per day



Puget Sound. A proposal to build such a pipeline was part of the proposed Northern Tier Pipeline, which foundered on environmental issues in 1982. In a controversial decision, Governor Spellman upheld the Energy Facility Siting Council's decision to deny a permit to the consortium that sought to build the pipeline.

Offshore Development

Offshore oil development is likely to be another controversial issue in the 1990s. Subject to environmental restrictions, major areas remain to be explored and developed off the California coast. There are also promising exploration sites off the Oregon and Washington coasts, and these areas are scheduled to be offered in U.S. Department of the Interior lease auctions early in the 1990s. Offshore oil development has been highly controversial in Southern California, but has long been an accepted part of the industry along the Gulf Coast. Just how easily promising tracts of Pacific Northwest shores can be leased and developed remains to be seen.

The borders of coastal states extend out three miles from their shorelines. The areas that Interior proposes to lease range from three to 200 miles out from the shoreline. Oregon and Washington will play major roles in determining how and when exploration and development will take place because they maintain regulatory power over offshore areas as far as 12 miles out from the shoreline. Both states have offered comments on Interior's leasing plans and have requested that sensitive fisheries, estuarine areas, and other ecologically fragile coastal areas be excluded from the leasing program (Figure 2). Interior has complied with some of these requests and has promised to consider others before any lease sales actually take place.

Under guidelines passed by the 1987 legislative session (Senate Bill 630), Oregon is developing a shoreline management plan that will define and coordinate state agency roles and establish a permitting process for oil companies. State officials note that an explicit goal of Senate Bill 630 is to avoid conflicts of the sort that accompanied California lease sales—conflicts that resulted in delays and confusion.

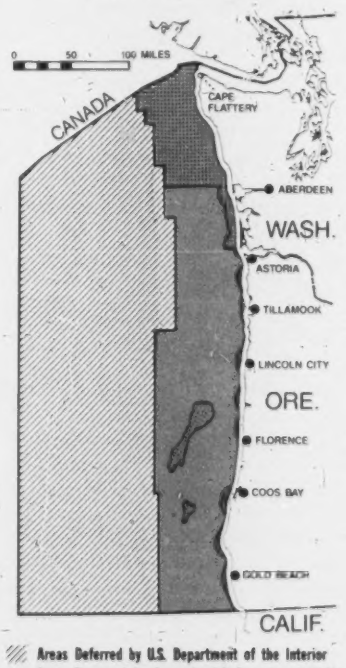
In Washington, the permitting process for offshore development is considerably more complicated than that of Oregon under its new legislation. A plethora of agencies in Washington have potential jurisdiction over offshore lands, including the Energy Facility Siting Council, the Departments of Ecology, Natural Resources, Agriculture, and Fisheries, and the Shorelines Hearing Board. In addition, local agencies, including cities, counties, and ports, could become involved, and Indian tribes will most certainly have an interest. At present, no mechanism exists to coordinate these diverse interests. The regulatory hurdle this situation presents to a lessee is formidable. Debates and setbacks similar to those in California would be likely if a lease sale came up for consideration under current circumstances.

If Governor Gardner's requested exclusions of Washington coast from Interior's leasing plan are honored (Figure 2), the apparent confusion among government agencies may become a moot point. The governor's request includes all of Washington's coastline and two-thirds of the area beyond the three-mile limit. If Interior does not agree to the exclusions, both oil companies and environmentalists will have to find their way through a regulatory thicket to advance their conflicting goals.

Previous skirmishes suggest that the conflict will be a major one. The Northern Tier proposal to build a pipeline under or around Puget Sound was fought hard by environmentalists. Similar environmental concerns about the impacts of large oil spills are likely to accompany an offshore leasing proposal. As a precedent for an offshore permitting process, the fate of pipeline proposals suggests that leasing under current institutional arrangements would result in a protracted public controversy.

At a conference on offshore development, California officials warned participants of the spotty track record of the Department of the Interior in honoring commitments made by previous administrations. Thus prepared for a lengthy and potentially destructive battle over offshore development, the state still needs to find an appropriate process for resolving controversial issues and coming to a timely decision about leasing proposals.

Figure 2: Potential Oregon–Washington Offshore Oil Tracts



SOURCE: U.S. Department of the Interior

Taxing Oil

The State of Washington's attempt to patch up its business and occupation tax in a special legislative session in August had an important impact on the petroleum refining industry. In an effort to make the B&O legal, the legislature established credits for in-state manufacturers who sell goods in other states and are subject to similar taxes in those states, and for out-of-state manufacturers paying similar taxes in other states on goods sold in Washington. Of the projected $42 million revenue loss due to these credits, $12 million represents lower tax payments from the oil refineries. Depending on business volume, the actual tax revenue loss due to the oil company credits on severance taxes paid to Alaska could run from $13 million to $20 million, according to the Department of Revenue.

Should offshore development take place, new revenue opportunities may arise. There is no provision that says that the U.S. government must share federal lease revenues with a state, but once oil is brought ashore, it may be taxable depending on the nature of the on-shore facilities and economic transactions involved. If refined within Oregon or Washington, such oil would be subject to the usual B&O and sales taxes (Washington) or income taxes (Oregon). If the oil is transported out of the state, only the revenues or income attributable to the handling and transportation activities may be taxable. The possibilities of additional tax revenue and of a stimulus to economic activity in high unemployment coastal counties could provide a counterweight to the risks of environmental damage posed by offshore development.

The Market for College and University Graduates in Washington

In addition to hiring in-state graduates, Washington businesses employ collegians from other areas, particularly California, Illinois, and Michigan. Yet importing college-educated talent is expensive and time-consuming. Should local educational institutions turn out greater numbers of appropriately qualified individuals? Or should Washington college graduates continue to compete in local labor markets with out-of-state newcomers?

Washington is blessed with a number of excellent public and private institutions of higher education. These colleges and universities are major economic assets and produce thousands of engineers, scientists, lawyers, doctors, teachers, office workers, and technicians each year.

The Higher Education Coordinating Board has recently offered the legislature and residents of Washington an extensive plan for the state's college and university system. As Washington examines the future of its higher education system, it should, at the same time, consider the state's labor market for college and university graduates. Just how adequately are these institutions meeting the demand for college-educated employees in the regional labor market? Where do students go after they graduate? Is Washington educating people for the benefit of Washington or for the benefit of other parts of the country?

The Graduates

The University of Washington grants 5,000 bachelor's degrees each year, 1,700 master's degrees, and 700 doctorates. The University's Educational Assessment Center, which surveyed all graduates of the university for the 1985-86 academic year, found that about 80 percent of the employed collegians were working full time in the field for which they trained. (Respondents totaled 43 percent; the number of unemployed was unknown.) More than 70 percent of those reporting found employment within the Puget Sound region, and 5 percent were employed elsewhere in the state. Of the 24 percent who left the state, more than 7 percent went to California, and 3 percent went to Oregon. Graduates receiving doctorates were much more likely to leave the Pacific Northwest.

A survey of Washington State University's 2,400 1985-86 graduates reveals that almost all of those responding earned bachelor's degrees (97 percent of 1,413 responses), and that three-quarters of them found employment within Washington. Just over 9 percent found positions in California, and 3 percent went to jobs in Oregon. More than 10 percent went from college into a graduate program instead of the work force.

Western Washington University's 1,700 graduates earned bachelor's degrees and/or teaching certificates during the 1985-86 academic year. A placement survey yielded responses from 68 percent of these graduates. Three-quarters of the respondents were employed, 8 percent had enrolled in additional academic programs, and 17 percent were unemployed.

Western produces many primary and secondary schoolteachers; 325 of the 1,151 respondents to the survey were teachers. Of these 325 potential educators, 36 percent found full-time teaching jobs in Washington, and 8 percent found full-time positions in other states. The remainder accepted substitute teaching jobs (26 percent), nonteaching jobs (11 percent), were unemployed at the time of the survey (12 percent), or dropped out of the labor force and/or went back to school (6 percent). These statistics suggest a significant mismatch between teacher supply and demand. More potential teachers took substitute jobs, nonteaching jobs, or failed to find a job than obtained full-time teaching positions. Those who took nonteaching jobs may have found higher paying opportunities outside the profession for which they trained, but the number of substitute teachers and unemployed people with credentials suggests a labor market that is supplying too many teachers at the prevailing wage levels.

The majority of Western's nonteacher graduates found jobs within Washington (58 percent of 478 respondents); only 12 percent took employment outside the state. A quarter of these graduates, however, were still looking for jobs at the time of the late-summer survey, and the remainder (10 percent) were classified in non-labor force categories (military, homemaker, travel) or had unknown status.

The results of these surveys are broadly similar. They indicate a tendency for Washington graduates (with the exception of teachers and doctorates) to find employment in their fields shortly after graduation. The universities are clearly making a strong contribution to the educated labor supply of the state, especially up through the master's degree level.

The departure of doctorate level graduates from the state may be a tribute to the excellence of the universities' programs, which make Washington's Ph.D.s and M.D.s attractive candidates for positions throughout the nation. The market for those at the doctorate level tends to be national in scope, and recruiting and job search processes often go well beyond the region where graduate training was received. Evidence from the University of Washington suggests that academic salaries are higher in other states—these students may be receiving better offers from outside Washington. Furthermore, academic institutions tend not to hire their own doctoral students, forcing new Ph.D.s to go elsewhere for their first teaching posts. In addition, many graduate students are of foreign origin, and these students often return to their home countries after receiving their degrees.

On the other hand, there may be far fewer openings in the regional economy for doctorate-level specialists than there are university graduates. Washington produces about 15 percent fewer master's and doctorate degrees per 1,000 residents than the national average. The low rate of production of highly trained professionals, com-

bined with a high outflow, could be interpreted as evidence of a thin job market within Washington.

Interstate Migration

The Census Bureau's data on the interstate migration of people who were attending college in 1975 and who resided in a different state in 1980 (Table 1), reveal that Washington is a net importer of those who are college-educated. This state attracted more college-educated people from every part of the nation than it lost, and particularly large gains were recorded from other Western states and from the northcentral portion of the country. A state-by-state assessment reveals that California is the largest source: 8,627 graduates left Washington for California between 1975 and 1980, but 16,144 came to Washington from California in the same years, a net influx of 7,517 people. Illinois and Michigan were also important sources of net immigration of college-educated people. Washington was a net loser of college graduates to only one state: Alaska.

The census data are not comparable to the data on university graduates in several respects. The Census Bureau only asked whether people were attending college in 1975—not how many had earned baccalaureate or advanced degrees by 1980. The age of the college-educated migrants is also unknown; they could be older, experienced workers or recent graduates competing with college-educated locals. Despite these qualifications, the census data suggest that Washington college graduates are competing in the local labor market with graduates from other states, particularly with those from California, Illinois, and Michigan colleges and universities.

Setting Educational Goals and Priorities

What do these data imply for public policy regarding the university system in this state? As a net importer of the college-educated, Washington receives the benefits of educated immigrants without the higher taxes that self-sufficiency would require. If public and private institutions in other states choose to educate students who emigrate to Washington, should we not just sit back and take advantage of their largess? There are good reasons why our goal should be to make higher education broadly available to the residents of the state.

Meeting the state's demand for higher education is the goal of Washington's colleges and universities. As stated by the Higher Education Coordinating Board, the state's public colleges and universities are to "develop and maintain a higher education system that meets the state's needs for cultural enrichment, social leadership, and economic development." The system is also charged to "provide access to higher education for Washington citizens who have demonstrated the ability to successfully complete a program of study" (Higher Education Coordinating Board, "The Washington State Master Plan for Higher Education," draft, July 1987). Social goals are stressed more often in these statements than economic motivations.

A chorus of high-tech firms has consistently repeated that high-quality engineering and scientific programs are critical to the emergence of new, rapidly growing firms. It's not just a matter of ready access to a university-trained work force, but a perceived need for nearby research and development facilities and an active scientific and engineering community to produce ideas for products and processes. The rate of emergence of new firms and new products and the rate of employment creation are linked to the existence of a high-quality university, even if there is a significant exodus of graduates from the state. The loss of some graduates is a necessary price for the people and firms that choose to stay in the area.

While the needs of local employers and projected enrollment figures favor an expansion of Washington's education programs, the enlargement of existing institutions may not be the best way to proceed.

Importing college-educated talent is expensive for employers. If sufficient numbers of locally educated people were available, firms could avoid the long-distance recruitment costs necessary to tap remote labor markets. These expenses are routinely assumed by large firms, but could be avoided if the local educational institutions were turning out appropriately qualified individuals.

In addition to serving the needs of today's state residents, the higher education system should prepare for a wave of enrollment in the future. The combined effects of the post-World War II baby-boom generation's children reaching college age and continued emigration into Washington are expected to result in a rapid expansion in the number of applicants to institutions of higher education from 1995 onward. The class of 2000

Table 1: Interstate Migration of College-Educated People
1975 to 1980

REGIONS	FROM WASHINGTON	TO WASHINGTON	NET MIGRATION
Northeast	2,320	7,138	4,818
Northcentral	4,145	13,251	9,106
South	6,345	8,522	2,177
West, excluding WA	24,532	36,108	11,576
STATES	**FROM WASHINGTON**	**TO WASHINGTON**	**NET MIGRATION**
California	8,627	16,144	7,517
Oregon	6,329	7,240	911
Idaho	1,847	2,753	906
Texas	1,897	1,939	42
Alaska	1,794	817	-977
Arizona	890	1,584	694
Illinois	771	2,574	1,803
Michigan	434	2,140	1,706
Ohio	591	1,435	844

SOURCE: U.S. Department of Commerce, Bureau of the Census. *Geographic Mobility for States and the Nation. Interstate Migration Between 1975 and 1980.* Tables 9, 11, and 16.

will number 15,000 more than this year's enrollment—the equivalent of another campus the size of Washington State University. These future students will come from the Puget Sound and, to a lesser extent, from the urban areas of Spokane, Vancouver, and the Tri-Cities.

While the needs of local employers and projected enrollment figures favor an expansion of Washington's education programs, the enlargement of existing institutions may not be the best way to proceed. Much of the population growth in the state is in the Puget Sound, but it's not in the proximity of existing public and private institutions of higher education. Branch campuses or new colleges and universities may be needed in Pierce County and in eastern King County. Vancouver, Spokane, and other growth areas also need better access to higher education. Enrollment and graduation rates are lower in Pierce than in King County, suggesting that propinquity to a campus is a critical factor. Many students work part or full time as well as attending college, and local institutions could attract more of these students.

Careful program choices are critical to any expansion and must be based on the comparative advantages of various college and university programs and the job market experience of graduates. The available data are limited to one-time surveys of graduates who used the services of university placement offices. The program decision process would be aided by supplementing a one-time survey of collegians with additional surveys one or two years after graduation. The surveys could then explore the strengths and weaknesses of programs. Graduate surveys should also be supplemented with surveys of employers to gather data on the needs they perceive and the recruiting practices they follow. Program design could also be improved if a comprehensive data base of college and university graduates, including private as well as public institutions, were available.

Worth Reading

Foreign Exports and the Washington Economy

by Dick Conway and Associates, prepared for the Washington State Department of Trade and Economic Development, AX-13, Olympia, WA, 98504-0613, August 1987, 27 pages, no charge.

Washington is frequently billed as the most export-dependent state economy in the Union. Some solid evidence on that point has been prepared by Conway. Using a new version of his long-term projection model containing updated input-output relations, he assesses the employment and income related to foreign exports. Conway finds that direct impacts of foreign exports accounted for nearly 21 percent of the state's total external trade and provided 112,000 jobs, about one out of every 20 total jobs in Washington. These jobs are concentrated in aerospace (one-quarter of the total), agriculture, forest products, transportation services, and wholesale and retail trade. When the indirect impacts of these exports industries' in-state procurements are included, a total of 415,000 jobs are dependent on exports, one out of every six jobs in the state. As Conway is quick to point out, this does not mean that the elimination of exports would result in the loss of all those jobs, because structural adjustments would take place if such a calamity occurred.

While the report is clearly written and informative, it is very brief, reading more like an executive summary than an exhaustive discussion of the topics raised. It is an excellent primer on the importance of exports to Washington's economy for a general audience. Those who closely monitor the international sector may find the report too brief and restricted in scope. The long-term outlook section is weak, as is the discussion of the methodology used for disaggregating impacts by region within the state. In addition, the document's policy recommendations are superficial, and their cost-effectiveness is not evaluated.

The report's strength is the information it provides about trends in Washington foreign exports and their importance to various industries. A follow-up study, dealing with the importance of imports to the state economy, would be an illuminating companion piece. Where would we be without those containers passing through our ports, Japanese and Italian parts on Boeing aircraft, Canadian natural gas, and so forth?

A Study of Alternative Tax Structures for the State of Washington

by Robert P. Strauss, Carnegie-Mellon University for the Washington Department of Revenue, Olympia, July 16, 1987, 222 pages, no charge.

This report summarizes the most ambitious analysis on state taxes yet conducted in the Pacific Northwest. The project was designed to provide Washington's Department of Revenue with a tool to form accurate estimates of the impact of various tax proposals, including alternatives to Washington's business and occupation tax.

Strauss chose a stratified sample design to highlight the range of industries in the state, the types of taxes, and the size of tax payments, and to ensure that a full range of tax situations was included in the data base. By matching up the federal and state tax returns of a sample of 5,991 businesses, a huge data base was compiled. With the resulting data base, one can estimate the tax receipts under alternative tax systems.

Strauss finds that the state's 1987-89 budget could be financed by a new tax structure consisting of a 4.0 percent retail sales tax, a 2.6 percent flat tax on adjusted gross income, and any one of three business taxes (a corporate net income tax of 5.6 percent, a value-added tax of 0.8 percent, or an invested capital tax of 0.45 percent). He argues that this tax system would be superior to the state's current system because it would reduce the variation in effective tax rates within and across industries.

While this report contains much new information, it leaves many questions unanswered. The variability of tax receipts over time cannot be adequately explored with a single-year cross-sectional sample design. Impacts on new business formation and survival are still a matter of speculation. The consequences of a transition to a radically different tax structure for existing firms, both large and small, are not addressed. Nor can readers be certain that the author's proposed tax structure would produce the effects in a real-life situation that it does in simulation (in which existing firms are frozen in place and future firms are locked out). Nonetheless, as the most ambitious tax study undertaken in years, this lengthy report certainly deserves a close reading by policy-makers and analysts involved in evaluating alternative tax proposals.

ASIAN TRADE

What Can We Learn from the Competition?

by Robert A. Baskerville

Not long ago, a U.S. business executive on his way to the Orient invited me to lunch. He wanted to learn what he could before he went off to Singapore, Taiwan, Korea, and Japan for two weeks. He would be in Korea for two days, he explained, and he wanted to make sure that he met the right people and made a lasting impression. He wanted to know how much he could accomplish.

I asked him if any of his promotional materials were in Korean, Japanese, or Chinese. No, they're all in English, he said, but they're nicely done: colorful, glossy, professionally produced.

What, I wondered, would the Asians do with them?

International trade accounts for one out of every five jobs in Washington State, and the value of the state's international trade in commodities totaled $40.9 billion in 1986. We produced some of these goods, we consumed others, and we sent some of them on to destinations in other states or abroad. International trade data show the relative importance of different areas of the world to our state's economy. Of the goods that we import, three-fourths come from Asian countries. Of the products exported from Washington, more than half are bound for Asia. Particularly striking is the fact that three countries—Japan, Korea, and Taiwan—account for 55 percent of the total two-way international trade in goods that passes through Washington's ports. In 1986 these three countries accounted for $22.3 billion of the $40.9 billion in total two-way trade. Imports from these countries amounted to $16.4 billion; exports to them totaled $5.9 billion.

Two points emerge from these data: Japan, Korea, and Taiwan are important to the economy of our state, and our trade with these three countries is out of balance. Should we not be making a concerted effort to help redress the trade imbalance by increasing our exports to Japan, Korea, and Taiwan? All three of them have been very successful in exploiting our market. Perhaps we can learn from their experiences.

Japan, despite its reputation as a great trading nation, consumes more than 85 percent of what it produces at home, and, some say, the predominant part of Japan's future growth will come from the Japanese producing for the Japanese. In the 1960s, when Japan's export dependence was even lower than it is now, many Japanese felt that they should concentrate their efforts on their own domestic market. They were reluctant to market their cars in the land of Henry Ford.

David Halberstam's recent book, *The Reckoning*, describes how Katayama Yukata, a Nissan executive, was exiled to the United States to a job that no one else wanted: marketing the first Datsuns. The heaters of those first cars wouldn't turn off, the brakes weren't adequate, and the engines were too small. When the head office was told that Datsuns would not start in cold weather and were therefore difficult to market in the northern part of the United States, it wanted to know why the Americans didn't put blankets over the engines, as the Japanese do in Hokkaido. Yukata fought with his head office for years before the Datsun was specifically redesigned and marketed to American tastes. The results are well known.

If there is a lesson in Katayama Yukata's accomplishments, it is that opening a foreign market requires perseverance as well as information, understanding, and language and cultural skills. Yes, Japan could have maintained a viable economy by producing primarily for its citizenry, but the value of the internationalization of its markets cannot be denied.

If it was difficult for American business to imagine that the Japanese could successfully market automobiles in the land of Henry Ford, it was inconceivable that the Koreans could challenge IBM. But, in a few short years, the Leading Edge PC manufactured by Daewoo has found a secure niche in our market, and the Blue Chip computer by Hyundai is not far behind.

Unlike the Japanese, the Koreans had no significant domestic market. Unless they were to be content with one of the lowest per capita gross national products in the world, they had to find overseas markets. The biggest market they found was ours.

The Koreans learned from the mistakes of the Japanese and, in spite of tremendous cultural and language difficulties, have been able to penetrate U.S. markets faster than the Japanese did. This is in part due to their initial reliance on Japanese trading companies to market their products, but the Koreans are now doing an increasing percentage of their own marketing, and their strategy for marketing automobiles, for example, is far more sophisticated than the early Japanese attempts.

In Los Angeles last year, I met two Americans who work for Hyundai America marketing the Excel in the United States. They used to work for Toyota. Before that one of them worked for Ford. Hyundai has also contracted almost entirely with well-known and established dealerships to market its product. It took the Japanese years to learn the importance of car dealers (a car company's real customers) in America. Deaf to the pleas of local Koreans who sought the dealership contracts in the United States, Hyundai established agreements with the big dealers and sold 168,000 Excels in 1986, a new record for first-year imports. The company expects to double this figure in 1987.

Whereas Japan and Korea have attacked the U.S. market primarily through powerful corporations, the Taiwanese have found strength through a large number of small companies. These companies were not able to market their

goods directly to the United States, but relied primarily on Japanese trading companies. Their astounding success has made some of them wealthy enough to do their own U.S. marketing and investment. In contrast to the Japanese and the Koreans, who subsidized and propped up their shipping companies to promote trade, the growth of Taiwanese shipping followed trade. Evergreen Lines, which has grown from a one-vessel company in 1970 to the world's largest private carrier, was not subsidized by the Taiwanese government nor did it enter into conference rate agreements. It worked its way to the top carrying the goods of the growing Taiwanese economy.

The Japanese, the Koreans, and the Taiwanese have succeeded by different routes, but a common element can be found in their diverse experiences. They have learned a great deal about us by learning our language and, through it, our culture. This is both the result and the secret of their success. The more they sell, the more they learn; the more they learn, the more they sell. Business people from Japan, Korea, and Taiwan generally speak, or at least read, English, and this gives them access to more information about us than we have about them.

Knowing the importance of the English language in the international market, the Korean government made an early decision to emphasize English language skills as part of the nation's economic development plan. English was, and is today, a required subject; and students study an hour a day, six days a week, from grade seven through twelve.

In 1966 I went to the Republic of Korea as a Peace Corps volunteer. My first job was to teach English in a small-town middle school and high school. I had 75 students in each class. They dressed in Prussian military uniforms and bowed in unison when I entered the classroom. Later, I taught language classes at Korea University in Seoul. At that level, each student was required to take a year of freshman English. In addition, most disciplines required English skills, for the textbooks and other materials in business administration, medicine, and the sciences were frequently in English.

Korea was still a poor country in 1966; the per capita gross national product was about $300. Yet the Koreans managed to devote a sizable portion of their resources to education and to English language instruction. With all this effort devoted to English, the amazing thing is that the overall results have been so unimpressive. Many students have gone through 10 years of English instruction and still haven't learned to speak or write effectively. But enough students have acquired enough English to facilitate the miracle of Korean export growth, a phenomenon that we are becoming uncomfortably familiar with.

JIM CHRISTIE

Last year I got a phone call from a former Korea University student of mine. He was in the United States on one of his twice-yearly selling trips, visiting buyers in New York, Chicago, and the Los Angeles area. He doesn't work for a big company, and it took him years to penetrate the U.S. market. I know it has been hard for him, because he's basically a shy person and wasn't a particularly gifted language student—although his English has improved considerably over the years. He does, however, have personal qualities that you have to respect: tenacity and endurance.

Language is the vehicle for culture. And the Japanese, Taiwanese, and Koreans, through English language study, have learned a good deal about the culture, history, geography, and economics of the United States. By comparison, our knowledge of their cultures, histories, and economies is barely detectable.

Their situation is not a mirror image of ours. English, after all, emerged as the international language of commerce and diplomacy after World War II. The rest of the world had to learn our language. The situation is changing, however, and to the extent that American business people wish to develop markets for products in specific Asian countries, they now need to learn specific languages. A basic rule of international commerce is that you can buy in your own language, but you sell in the other person's language.

Asian markets are complex and diverse. We need detailed knowledge about the various countries to compete successfully. We can learn from English language sources that the Koreans are now running a trade surplus with the United States and that they have a trade deficit of similar proportions with the Japanese. We can even learn that the Korean government is pushing Korean businesses to replace Japanese suppliers of components, machinery, and technology with U.S. suppliers. What we cannot learn in English is the important information: Which particular Korean manufacturers are likely to give up Japanese contracts for U.S. ones? Which ones are dissatisfied? What will it take to make them happy?

In the summer of 1987, a group of Korean business executives came to the University of Washington for training. In private (and in Korean), they explained that it is difficult for them to switch from Japanese to U.S. suppliers, despite their government's policies. They are afraid that the quality of U.S. products will not be as high as that of Japanese products. They are concerned that they will not be able to communicate with U.S. business people, either on a linguistic or cultural level. They worry that product instructions and information will not be supplied in a language that their employees can read. They are concerned that they will not receive good after-sales service. They are afraid that they will not be treated with courtesy and respect.

If U.S. business people knew about and understood these concerns, they might be able to address them—if they knew the proper words for addressing them.

Chul-su Lim or Charles Woods?

Chul-su Lim works for a Korean trading company. He's been with the same company more than 15 years and was transferred to the United States office about two years ago. He hadn't really planned to come to the United States, but, the fact is (and remember, this is confidential) he wasn't doing well at the head office in Seoul, and his superiors decided that they would like to have him as far away as possible for a few years. They portrayed the transfer to the United States as a big deal for him, but everyone knew what was really going on. He is now near the end of the second year of a three-year tour in the United States and is wondering how he is going to get back into the mainstream of his company when he returns to Korea.

Because Lim had not planned to come to the United States, he didn't know much about the country before he left Korea. Most of his information came from cowboy movies. He had never studied English, but he did pick up a phrase book at the airport in Seoul. This book was written by a Korean expert on English and included such expressions as "Give me a high five, man" and "How goes the enemy?"—a way of asking a stranger for the proper time.

The fact that he knows no English causes problems for Lim. He can't read street signs or restaurant menus. He doesn't know English script (it looks like chicken scratching to him), so he is at the mercy of his American driver to take him and his family around. He can't read American newspapers, so he relies on the Korean language press for his information about the United States and about business opportunities here. When conducting business, he must either use an interpreter or deal only with those Americans who speak Korean.

Lim's two children attend a Korean language school with other Korean children. The school was set up in the United States years ago by Confucian missionaries. The Confucian Missionary School teaches more or less the same curriculum that his children would receive in Korea. The school offers language instruction, Japanese and Chinese, but it does not teach English.

The Lims live in a large Korean-style house in a compound of similar houses separated from the American community by a high wall. Access to the compound is through a guarded checkpoint. The heated floor wasn't constructed properly, the tile roof doesn't look right, and the sliding paper doors are always sticking in their channels. The Lims were required to deposit two years' rent in advance for their Korean-style house, the sum of $120,000. If they moved into an American neighborhood, the rent would be much less, but then they would be living with the host country nationals.

Mrs. Lim spends much of her time shopping and has developed an interest in the local culture. She has accumulated quite a collection of antique porcelain chamber pots from the Coolidge era. Mrs. Lim is not sure what the term "chamber pot" means. She looked up the word "chamber" in the dictionary and has decided that chamber pots must have been used for room service of some sort. When Mrs. Lim held a dinner party for some of her husband's American business associates, she served soup out of one of her most elegant pots and was puzzled by the decidedly cool reaction from the Americans.

The Lims eat mostly Korean food, but they have difficulty getting the necessary ingredients. Fortunately, they have a friend working on the Korean military base who can get them certain items from the post exchange.

Lim, for his part, tries to do the best job he can for his company, but it hasn't been easy for him. For example, even though his company has been marketing automobiles in the United States for 20 years, it assumes that the same models that sell in Korea should be appropriate for the U.S. market. Furthermore, the company provides Lim with only Korean language promotional materials.

Lim finds the Americans to be an enigmatic people. They can be warm and friendly, he says, but they have a sullen streak and, perhaps, the potential for violence.

This story is actually taken from the experiences of several Americans in Korea. Substitute the name Charles Woods for Chul-su Lim, and you'll have a realistic account of a U.S. business executive in Korea.

Are there any lessons here for us? Should we require our students to take Mandarin Chinese, Japanese, and Korean languages from an early age? Should we institute crash cultural programs?

The Japanese, Taiwanese, and Koreans have done well at defining their educational objectives, but their methods haven't always been efficient. We can do better than they have if we make the decision to learn from their experiences. A trading nation needs a good supply of people who speak a foreign language at a professional level, who establish life-long relationships with people in other countries, and who understand the workings of foreign cultures. These skills aren't learned through traditional schooling, however. Residence, study, and employment abroad are the methods that appear to have the best success. The Asians who live, work, and study in the United States acquire the necessary skills. The ones who study at home seldom have the same success. Our students and employees need the resources to permit them to study and work abroad with the goal of achieving professional competence in Japanese, Korean, and Chinese languages.

We do, in fact, have a pool of people who have taken the time to educate themselves about foreign countries and to develop professional language skills. Yet these people seem to have difficulty convincing U.S. employers of the importance of their skills and, as a result, have a hard time acquiring business experience. Too many U.S. companies still believe that a few words of greeting or a few key phrases in Japanese or Korean will suffice. It is not true that they will love us if we learn a little of their language, a little of their culture. In fact, we may only amuse them.

United States businesses should, instead, take a long-range approach and should train employees who show an interest in acquiring the necessary language and cross-cultural skills, hire individuals who have already invested their own time and effort in acquiring those skills, and recognize the importance of long-term relationships with individual Asian business people. Once we understand the need for trained people and once we define our specific objectives, we will find that we can enter and compete in Asian markets.

Robert A. Baskerville is a lawyer in the international department of Davis, Wright & Jones, a Seattle firm.

For the Manager: Gaining Compliance from Key Subordinates

by Terrance L. Albrecht

Managing talented, independent people is always a challenge, even for the most skilled superiors. Managing means directing the actions of another, but the process is seldom that simple. Management is not a linear progression in which directives flow from superiors to subordinates and are automatically carried out. Instead, the process is a circular one, and the sign of effective management is usually the willingness of employees to decide to comply with managers' requests, whether those requests involve difficult work assignments, coping with organizational change, or improving performance.

Literally hundreds of articles have been written on the importance of teamwork, and people-centered management as opposed to authoritarian, carrot-and-stick approaches. Managers are encouraged to ask or persuade. This manner of communicating is termed *compliance-gaining*: using strategies that influence subordinates (particularly key subordinates) to do certain tasks by convincing them that the tasks are worth doing. When independent-minded subordinates resist their managers' directives, it can be face-threatening for the superior and problematic for the task at hand. Managers respond to resistance by using follow-up compliance tactics to persuade subordinates into desired actions. The following scenario has been written with three different endings to illustrate the different tactics that a manager might employ. Which strategy would you, as a manager, choose to handle the situation?

Tom is a project manager in the marketing department of a leading electronics firm. He and his staff of associates are under considerable pressure to meet several deadlines in the next two weeks. The senior department manager has just asked him for an extensive revision of a marketing plan that Tom and his staff had earlier proposed for a new product that the company is about to launch. Tom needs to have Bob, his key subordinate, do the revision. He knows that the needed revisions will force Bob to work overtime and on the weekend to complete the plan on time.

Tom: *Bob, I know you've been working hard, but I need your help with this. Louise has asked us to revise the XYZ plan, and she needs it a week from Thursday. I would really appreciate it if you would do this. It would help us stay on schedule and keep Louise off our backs.*

Ending number one:

Bob: *But I'm already loaded with three other project reports. I just don't have time.*

Tom: *I know, but I really need you for this one. We're all under pressure. I know I can count on you to do a good job on it.*

Ending number two:

Bob: *But I'm already loaded with three other project reports. I just don't have time.*

Tom: *I know, but do this anyway.*

Ending number three:

Bob: *But I'm already loaded with three other project reports. I just don't have time.*

Tom: *I know, and I'm sorry to have to lay this one on you, too. I know you'll do a good job for us. How about if I give you first crack at the vacation schedule this summer?*

The Study

We were interested in different compliance-gaining strategies that the readers of *Pacific Northwest Executive* said they used in working with key subordinates, what their subordinates said they did, and how those managers handled subordinate resistance. To investigate this process, we polled approximately 1,600 subscribers.

Managers were asked to complete a questionnaire and to give a companion survey form to their key subordinates. A *key subordinate* was defined as someone with whom the manager usually had daily contact and who was a critical work group member. The forms were filled out independently and returned in separate envelopes. The six-page questionnaire sent to managers included 33 questions on the types of strategies used in their initial attempts to influence subordinates, 33 questions on how often the same strategies were used following resistance by subordinates, and 21 items on the ways in which subordinates denied the requests or directives of their superiors. Finally, superiors were asked a series of questions about the nature of their relationships with their subordinates, the type of organization in which they worked, and general demographic information.

The parallel six-page questionnaire for subordinates included similar items about their perceptions of their superiors' influence tactics on initial and follow-up requests and questions on the type of strategies they used to resist their superiors. There were also questions on individual relationships with superiors, the organization, and demographic characteristics. Both questionnaires were filled out anonymously.

We obtained a final usable sample of 176 matched pairs of superiors and subordinates. Our sample of superiors represented a wide variety of ranks and organizations, including senior and mid-level managers, professionals, and owner-managers of small to large corporations. Subordinates were equally broad ranging, including those in senior level and clerical positions. Most superiors were male; the majority of subordinates were female. Both groups were similar in age.

We measured seven compliance-gaining strategies (using an instruement devised by David Kipnis and his associates) that managers used to get their employees to comply with their requests:

- **Reason**—influencing subordinates by relying on facts and substantiated claims to support requests, stating the objective merits of the requests, and giving answers to the "Why?" questions.
- **Friendliness**—attempting to create a positive impression on subordinates, employing outgoing gestures to build rapport and a relaxed feeling.
- **Assertiveness**—using a forceful manner, setting deadlines, making direct requests.
- **Coalition**—getting support from others to pressure subordinates.
- **Bargaining**—exchanging favors, using obligation as an inducement.
- **Appeal to higher authority**—using the influence of others in higher levels of the organization to back up requests.
- **Sanctions**—relying on rewards and punishments regarding job security, pay, and employment conditions to gain compliance.

The subordinates, in response, resisted —if they did, indeed, resist—in one of five ways (measures based on the work of Margaret McLaughlin and her colleagues):

- **Nonnegotiation**—outright refusal to comply.
- **Identity-management**—questioning the expertise of the superior, asserting that more experienced superiors would not make such requests and that the subordinate is not the appropriate person to carry out such requests.
- **Emotion**—showing hurt at the request, perhaps appealing to friendship in attempting to refuse the task.
- **Justification**—appealing to established norms, standards, procedures, policies, or assigned tasks as reasons for noncompliance, also describing the costs of complying and the benefits of noncompliance.
- **Negotiation**—offering to compromise or trade one task for another, seeking third-party mediators.

Persuasion, Resistance, and Follow-up

Managers consistently reported that they used reason and friendliness to get things done. They viewed themselves as generally polite and reasonable when working with key subordinates. This appeared to be a fixed, consistent self-view. In general, there was minimal resistance in response to the initial requests made by managers. As noted in Figure 1, resistance occurred only seldom or occasionally, and many strategies were never used by subordinates. However, when managers were confronted with resistance, most repeated the earlier strategies of friendly, polite reasoning. This finding about the tactics of superiors was verified in the independent reports from subordinates. They generally confirmed that the managers' perceptions were, in fact, accurate representations of their behavior.

In short, what emerged from the data was a consistent managerial role. Position differences among the respondents had little to do with their actions or strategies. The amount of power the managers had, the extent of formalization in their organizations, and the amount of closeness felt toward individual subordinates played little part. Managers portrayed themselves as polite and reasonable and reported that they usually didn't resort to forceful techniques of bargaining, appeals to higher authority, or sanctions. Subordinates agreed that their managers primarily used tactics of reasoning and friendliness, followed to a lesser extent by assertiveness.

We found little to predict which initial compliance-gaining strategies managers would use. Variations in the type of situation or relationship didn't seem to influence the way in which a manager approached his or her subordinate. Not surprisingly, the greater the difference in perceptions of power and status between a superior and subordinate, the less the use of bargaining and negotiation strategies. It is simply hard to bargain when people cannot agree on who holds the cards.

The strategies employees used to resist their bosses were more dependent on the immediate actions of their superiors. When bosses used a bargaining approach, subordinates reported that they were more likely to respond with negotiation and justification strategies. To a lesser extent, if the boss told the subordinate to do the task because a senior executive wanted it, the subordinate was more likely to question authority. An interesting finding was that subordinates were less likely to blatantly refuse requests made by older superiors. An older superior tends to be obeyed more readily than a younger one.

The follow-up compliance strategies used by superiors were based primarily on the strategies they had first used. For example, if a superior tried reasoning or being friendly initially, he or she tended to try that again in the face of resistance. Follow-up tactics were also affected by the way the subordinate resisted. Subordinates who attempted to negotiate with their superiors brought out their superiors' friendliness, bargaining, and reasoning responses. If subordinates tried to justify their refusals, some managers countered by appealing to higher authorities.

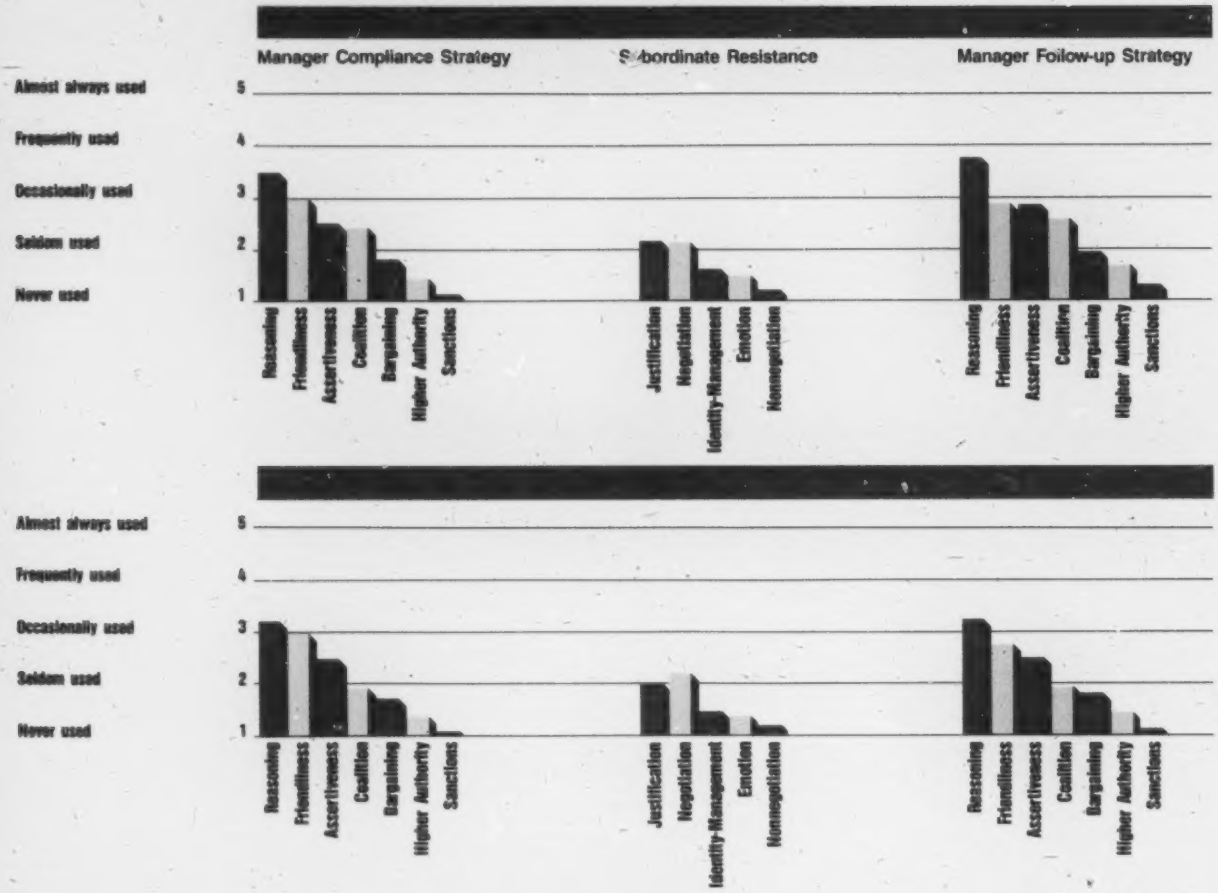
The Implications for Management

Many superiors see themselves as—and, in fact, are—rational, even-handed, and cordial in dealing with key employees. They are not likely to change their behavior based on the kind of situation or power relationship that exists. This means that some managers are not carefully assessing the unique goals and motivations of their subordinates, the impacts of the work setting, or their relationships with subordinates. Even though they may use reasonableness to seek compliance, managers who do not provide their subordinates with vivid and individualized explanations or who are not sensitive to situational contexts may well find a lack of cooperation.

Bargaining and negotiation processes occur most frequently when superiors and subordinates agree on the relative distribution of power in their relationship. Less agreement on this fundamental dynamic inhibits the useful give-and-take that makes for healthy and satisfying work relationships. If a subordinate, for example, feels that the boss assumes more power or asserts more authority than he or she is entitled to, the subordinate may resist more forcefully and be less willing to negotiate a mutually acceptable outcome.

The emergence of the rather fixed, consistent picture of the polite, reasonable manager is not surprising. Most people in higher positions project themselves in a positive manner, and this is the perception that many managers want to have of themselves. But any technique, even a polite one, can become oversubscribed. Preoccupation with one's technique can obscure open, direct communication between people. We received a response, for example, from one

Manager and Subordinate Compliance-Gaining or Resistance Responses (Mean) *by frequency of use*



manager who described his style as one of "continued discussion" with subordinates until they reached "alignment." Failure to achieve alignment meant that the employee received "counseling." The next step was either reassignment or dismissal.

The dialogue between two people who have to work together on a daily basis is more than just a patterned script. People in organizations are deeply affected by the interactions they have with others, especially when compliance or noncompliance is at stake. More than in any other setting, success, financial reward, personal self-esteem, and job security are tied into the relationships that people develop with one another at work. Any managerial method that, over time, ignores the unique qualities of each subordinate and each situation may lose effectiveness.

In sum, the managers surveyed exhibit a remarkable conformity and consistency in their compliance-gaining communication with subordinates. As with any managerial behavior, there are benefits and costs associated with this communication. One benefit of a consistent use of friendly reasonableness is that it generally evokes an equally temperate negotiation posture from resisting subordinates, rather than outright refusal or emotion. A second benefit is the predictability that consistency brings. If managers know what to say to key subordinates to encourage them to do what is needed, the management of human resources becomes that much easier. More time and attention can then be devoted to managing other resources and problems.

The friendly, reasonable strategy can, however, ignore the fact that successful interpersonal relationships need to be flexible. In the sensitive, conflict-prone relationships between managers and their key subordinates, managers who respond to highly resistant subordinates in the same manner each time may be unproductive. Sometimes assertiveness, the use of sanctions, or strong bargaining may be a better response for all concerned. Matching the fervor of the employee can sometimes let the employee know that he or she is being heard and that the contact is genuine. Managers must adapt to the situations they are in and not rely solely on formulaic persuasion in response to resistance.

Gaining the compliance of key subordinates is an important, continual challenge for managers. Understanding ways of expanding one's repertoire of strategies and ensuing behaviors is vital for managers to work more effectively with key subordinates on a daily, as well as a long-term, basis.

Terrance L. Albrecht is an associate professor in the Department of Speech Communication at the University of Washington and is the author of the forthcoming book, Communication in Organizations: Structures, Processes, and Personal Control.

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PACIFIC NORTHWEST Executive

Roundtable: Japan in the Year 2000

REGIONWATCH

- The Dynamics of the Natural Gas Industry
- Employment, Hours, and Earnings Indicators
- Employment and Establishment Growth

Women in Senior Management

The Promise and Reality of Artificial Intelligence

Commentary

Women in Big Eight Accounting

"How do you expect to raise an infant and work here 50 hours a week?" "How many more children do you plan to have?" "Does your husband want you to work?" These and similar questions were not uncommon for women recruits at Big Eight accounting firms in the late 1960s and early 1970s.

We don't hear those questions today. It is one small indication that progress has been made for women in the Seattle Big Eight. There are other indications as well: all Big Eight firms have women in management positions. A few have women partners. All are hiring a much higher percentage of women at the staff level. Most firms are concerned about how they will retain those women.

Some people have suggested, therefore, that all is well, that time will take care of the rest, that in eight to 10 years there will be numerous women within the ranks of Seattle's Big Eight partners. I disagree. I believe that we have an opportunity to advance women into the partnership ranks. But it will require more than the passage of time—it will require change in Big Eight culture and policy.

The Big Eight culture is unique. As would be expected, it is male oriented. (Women, except for secretaries, did not even come onto the scene until the late 1960s.) It is competitive ("up or out" is a well-recognized Big Eight trait), and it is aggressive. The old-boy network is strong. Women generally don't fit into this culture as well as men do.

The presence of women within the Big Eight is also disruptive to the men who have grown accustomed to the all-male environment. "He doesn't have the same comfort level with her that he has with John Doe" is not an uncommon statement.

This comfort issue leads to a significant problem for women: the lack of suitable mentors. I have yet to meet a Big Eight partner who achieved his or her position without a mentor, yet women generally have a difficult time finding effective mentors. In the Seattle Big Eight, the potential mentor is most likely a white male who is comfortable with women as secretaries, as mothers, wives, or daughters, but not as professionals. He's not totally at ease with the idea of taking a young woman professional under his wing. He runs risks in doing so. And so does she. As with so many other cultural issues, we must teach both men and women to recognize that we all have prejudices and stereotyped images that interfere with our ability to deal effectively with members of the opposite sex. Once we understand these prejudices, we can begin to deal with issues such as the mentor.

As with Big Eight culture, policies were designed for male professionals and have not traditionally taken into account the physical or emotional differences between men and women. Policies related to childbearing and nurturing are especially critical. It's a fact of life that women are the childbearers. The professional woman who is also a new mother will be hard pressed to work 50 to 60 hours a week and, at the same time, adequately care for her newborn. Historically, women in this situation have had to choose between work and family. Not surprisingly, most chose family.

A part-time work policy gives the working mother a third alternative: the opportunity to continue her career and care for her child. Part-time policies work—Touche Ross's Seattle policy is proof. Women professionals have been able to continue their careers and still have time for their infants. They have not had to face the ultimatum that too often resulted in postponed or abandoned careers.

Once cultural and policy norms are adjusted to recognize the needs of women professionals, I believe that we will see a larger number of women in the Big Eight partner ranks. Time, in and of itself, is not enough.

Mary Ann Ekman
Partner
Touche Ross & Co.

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Cover photo by Richard G. Shaw

THE PACIFIC NORTHWEST EXECUTIVE ROUNDTABLE

How Will Japan Respond to Change?

In late 1987, Pacific Northwest Executive *hosted a roundtable discussion on the economic, technological, and social changes that are taking place in Japan, how that country might deal with those changes in the years to come, and how those changes might affect the Pacific Northwest and the United States. The central theme of the discussion was how Japan would respond to coming changes if it had the unheard-of ability and insight to "do it right": to make the right choices, to take a leadership role in world economics, to perform in a manner that consistently leads to optimum results. What emerged from the roundtable was a sense of what is likely to occur in Japanese economic and social settings between now and the year 2000.*

Participants in the roundtable included Jackson N. Huddleston, Jr., managing associate of Huddleston Associates and the Kermit O. Hanson Professor of Business Administration at the University of Washington; Professor Shumpei Kumon, Department of International Relations, University of Tokyo; Professor Thomas W. Roehl, University of Washington Schools of Business Administration and director of the Pacific Rim Project; and Griffith Way, an international lawyer specializing in American companies that do business in Japan.

PNWE: There have been major realignments in exchange rates recently, especially between the United States and Japan. What kind of impact is that having in Japan, both in terms of impact on the economy and changes in government policy?

Kumon: Realignment has had a strong impact on the industrial structure of Japan. There has been a restructuring in almost every sector. Coal mines have been closed down, and shipbuilding has had to be reduced. More activities are concentrated on high-tech industries. Those industries that have been exporting consumer goods or textiles are also shifting their activity into something else. The period of recession due to yen appreciation is already over.

PNWE: Is the management of the Japanese economy a crisis kind of management? Is that the optimal way to manage the economy?

Roehl: I think that change is almost taken for granted in Japan, in a way that we in the States aren't used to. As a result, what has to be done to overcome a crisis seems less abnormal, maybe, for a Japanese manager than for an American manager, especially in the established industries. And that brings up the kind of experience the Japanese have had with managing change. Some of the Japanese managers that I've talked to about this question of change said, "Well, this is just sort of an extension of what we've been dealing with for a long time. We've got to move faster now than previously, but it's not something new for us. We've been dealing with this for the last 15 years." And I think you might argue that that attitude gives Japan an advantage.

Way: One of the major differences between the two countries is that it takes longer to phase out an operation in Japan, principally because the work force cannot be summarily dismissed, and therefore the process of moving people between industries is a very serious one and requires the cooperation not only of the industry itself but of the government, unions, and everyone who is involved. Change is probably more difficult in Japan, but once it's undertaken and the policy is determined, it is very effectively carried out.

Kumon: If the crisis is unexpected and disastrous, the environment will force change. Everybody first goes into panic and then looks for the help and assistance of the government. People want to stick to what they have been used to. They don't want to change. At the last moment, when they finally see that they have to do something new, then consensus is formed, and everybody begins to rush in the new direction.

Huddleston: Isn't the United States always talking about change for somebody else rather than looking at itself and seeing how it should manage change in its society? The Japanese have been managing extremely rapid change for four decades.

Kumon: Japanese perceptions of the U.S. manufacturing industries or the U.S. economy are that, yes, the United States has been adjusting to change in external conditions since the mid-1980s. But because of Reagan's economic policy and the high value of the dollar, the impact wasn't clear. Since last year, the effect has become clearer to the Japanese and the competitiveness of American industry has plainly been increased. That's what the Japanese people are afraid of. That kind of change is welcome in a sense, but at the same time, after all, the United States is quite strong.

Roehl: One of the reasons that it's hard for Americans to see their increasing competitiveness is that those productivity increases have led to a decrease in manufacturing employment. So when we see people losing their jobs, it's hard to understand that at the same time we end up producing the same amount of manufactured goods. Japan is going to experience the same thing. As it continues to move toward increases in productivity, Japan will have problems finding new jobs and meaningful jobs for the people who are displaced.

Huddleston: There will not be a gross increase in Japanese unemployment; there'll just be sector differentiations in unemployment that will cause some disintermediation within the society. But Japan has the capital to deal with the issue, whereas the United States is borrowing capital from Japan and not using it for productive resources. When Japan borrowed from the United States in the 1960s, it used that money for productive resources that then created additional wealth and assets. We're not creating additional wealth and assets in our treasury borrowings.

PNWE: The inflation rate over the last year was 0.6 percent in Japan. Is inflation going to be a problem?

Huddleston: Japan can handle inflation if it passes on the reduction in prices that comes with the reduction in the cost of im-

Japan obviously has been very successful and has done it without a [military] defense. It's going to be a real challenge for Japan if the United States decides that it's no longer willing to continue to invest very substantial amounts in putting out some of these Persian Gulf fires.

—Griffith Way

ports because of the strength of the yen. But the United States doesn't have that ability because the dollar isn't as strong. So Japan has the room to deal with inflation. If you have 0.6 percent inflation and the rate goes to 1.5 percent, you may have to raise your discount rate. But it's a marginal increase compared to the situation that we're in.

PNWE: If interest rates rise in Japan and the government doesn't act to constrain them, wouldn't that lead to an increase in interests rates in the United States?

Roehl: Japanese private sector actors will feel uneasy if U.S. rates go up, and they know that they're going to lose the funds necessary to carry through their own policies for investment in Japan. They're going to be tempted, without any sort of action on the part of the government, to bid up Japanese private sector rates to keep those funds in Japan. And that creates a dilemma.

Kumon: For Japan to help the United States, in the sense that it supplies enough capital, there have to be interest rate differentials. But in order to fight against domestic inflation, the interest rate in Japan should be increased to a certain extent.

Huddleston: Why does it have to be increased? That is a reaction of the 1970s and 1980s. If we were talking in the 1950s and 1960s, we would say that we could fight inflation by lowering interest rates because the basic cost of funds went down. So in Japan today, do you have to increase your discount rate to fight inflation or do you lower your discount rate to fight inflation?

Kumon: I think the mainstream response would be to increase the interest rate.

Huddleston: Do you agree?

Kumon: I don't know. One problem is that the Japanese government has to maintain its policy of reconstruction of the country's fiscal structure. By selling NTT [Nippon Telegraph & Telephone Corp.] stock, the government expects to have substantial amounts of revenue, and, in order to achieve that revenue volume, the NTT stock price should be kept high. That means that the interest rate should stay low—over the short term, at least.

The "Hollowing Out" of Japan

PNWE: Let's switch to the topic of emerging competition. If Japan does it right, how will it deal with emerging competition from Taiwan, Korea, Hong Kong, and Singapore?

Way: The "hollowing out" of Japan has led to the transfer of substantial manufacturing capacity into Korea and Taiwan. The Southeast Asian countries, with their low wage rates and high technology imported from Japan, will be looking to the American market. The restraints that are now on the Japanese who sell to the American market do not yet apply to other Asian countries.

Huddleston: I'd rather be in Japan's position and have Asia as my market. As one high official said to the prime minister of Canada, "Leave us Asia, you take Latin America."

Roehl: Expanding markets in Asia are going to present new sales opportunities for everyone, and the Japanese will have the ability to diversify export markets to the extent that they haven't been able to do in the past. The Japanese have more flexibility than we think.

Way: If Japan is going to lose a number of its industries to offshore production, just as the United States has, what's going to happen to take up the slack? Is high tech capable of absorbing these employees?

Huddleston: Japan has a 98 percent literacy rate and the United States has a soft 80 percent. Japan can move its population much more effectively or take its population that's growing up and employ it more capably than this country can.

Way: There are a number of Japanese who feel now that many of the traditional systems are going to have to be changed, particularly that of lifetime employment. That practical concept has been extremely important in creating a type of work force that has been very effective.

Kumon: Eventually, the whole cultural background, the traditional value system, will have to change accordingly, and I feel that, yes, it is changing quite rapidly, as far as the younger generations are concerned. To them, the value of lifetime employment is not as high.

Huddleston: Until they go to work.

Kumon: Even after going to work, they do not hesitate to change jobs.

PNWE: Does Japan, like the United States, have a Baby Boom generation? Will it face an aging population, implying a slower growth of the work force in the future?

Way: Their situation is even worse.

Huddleston: It almost parallels the U.S. numbers.

PNWE: With the same timing, or will their crisis come earlier or later?

Way: We'll be going through that slowdown very soon, but Japan will go through it a little later.

Kumon: Well, we are catching up.

PNWE: How are the Japanese going to respond to this very aged work force?

Kumon: By a change in technology and in Japan's institutional framework. Our work retirement age or work period will be prolonged. Japanese will continue to work until they are 65, 70, or maybe even 75 years old, and technology will change appropriately so that they don't have to worry about the weakness of sight or the strength of muscles.

PNWE: How will Japan find high-tech workers for its new high-

What will all those bright young [Japanese] who ran over to Salomon Brothers do when they find themselves out on the street? What happens when the music stops? I don't know whether it's going to be Salomon or another company, but those young men and women who jumped to the American corporations only for the money will have a hard lesson coming to them.

—Jack Huddleston

tech industries? Where is Japan training these people?

Way: The educational system is producing them remarkably well, and the prospects for creating a good labor force are much greater in Japan than anywhere else in the world. But it's still a question of whether the Japanese can train their population overnight.

Huddleston: If the Cold War is over, as some people think, Japan is in a better position to take advantage of the new environment than anybody else. Japan is probably going to have a great impact on Russia, because Russia sees Japan as a technological model.

Roehl: In this rosy scenario where Japan does it right, how do we set up systems that develop people with high-technology skills without damaging the efficiency of established organizations? I don't have a good answer for that.

Way: The availability of labor in Japan today is certainly much greater than it was 10 or 15 years ago. There are very capable Japanese who are now willing to work for foreign companies, which means that there is an increased fluidity of labor.

Huddleston: No, I don't agree. I don't think that there's a better pool of Japanese labor for foreign corporations today than there was 10 or 15 years ago. I think that you step outside Japanese society when you go to work for a foreign corporation.

Kumon: More and more Japanese are prepared to work for a foreign firm.

Huddleston: But they haven't experienced what will happen if Salomon Brothers gets bought by somebody else and decides to close its Tokyo office and its $300 million investments, for example. What will all those bright young guys who ran over to Salomon do when they find themselves out on the street? What happens when the music stops? I don't know whether it's going to be Salomon or another company, but those young men and women who jumped to the American corporations only for the money will have a hard lesson coming to them.

PNWE: Why do Japanese work for an American firm in Japan?

Way: The money in American firms is attracting people, and there is, I think, a real conflict going on right now between tradition and money.

The Conflict Between Tradition and Economics

PNWE: Which is going to win: tradition or economics?

Way: Japan has always been very good at putting the two together. And I think the whole secret of Japan's success is its ability to maintain traditions and combine them with modern elements.

PNWE: A foreign businessman we know who has dealt with Japanese managers in various deals said to us that he'd never seen people who could create instant traditions at the rate that the Japanese can. How does that ability affect international bargaining and negotiation?

Way: What you're talking about is foreign perception. I don't think the Japanese are changing their traditions, but I think that the foreign perception of Japanese tradition—and, in essence, what tradition is—has changed substantially as our appreciation of Japanese society and how it works has increased.

Huddleston: If Japan does it right, we'll really be talking about economic success without social disruption.

PNWE: Can Japan really become a powerful nation without a military force to back it up? Don't they need to build up their military?

Way: Their tremendous success, it seems to me, answers that. Japan obviously has been very successful and has done it without a defense. Granted, there's been a long period of world peace. It's going to be a real challenge for Japan if the United States decides that it's no longer willing to continue to invest very substantial amounts in putting out some of these Persian Gulf fires.

PNWE: But will the Japanese have to increase their spending on defense because their economic power requires it or because the United States has asked them to do so?

Kumon: Japan has raised defense spending just to be friendly to the United States. The Japanese people do not care about real self-defense capabilities because the majority of the Japanese believe that defense capability is not necessary. And for the foreseeable future, I do not think that Japanese society will change its opinion.

PNWE: Will the Japanese government step in and start taking action to influence the American economic system in ways that will benefit both countries or will it simply ignore the American plight of double deficits? In other words, if we can't do anything to solve our problems, will the Japanese government do something to make us solve them?

Way: Japan has a huge investment in the United States and, therefore, a huge stake in what we do. I don't think that it will be very long before they have—just as we have—an office of the U.S. trade representative. I foresee a Japanese representative who may be making periodic trips to Washington, D.C., to try to tell us how to run our government.

Kumon: I'm sure that Japan will feel it necessary to do something, but I'm not sure about the capability of the government, either the American government or the Japanese government, to achieve that kind of goal.

PNWE: What policies will Japan follow in the next 15 or 20 years?

If I buy something in Japan, I know that there's much higher likelihood that it's going to work. I can buy products that I don't have to carry back to the store. In a sense, I'm willing to pay for some of the inefficiency that exists in Japanese distribution in exchange for something that works smoothly.

—Tom Roehl

Kumon: Japan will have to deal with the problems that accompany this process of transition of industrial structure. Agriculture has to be taken care of in some way just as Japanese industrial structure has been changed. Agriculture will become at least part of Japan's highly industrialized economic activities. And Japanese society has to be opened so that laborers or software workers or whoever can move into Japan more freely. I don't know exactly what the policies are that can achieve those goals.

Way: What bothers me about Japan doing everything right in our eyes is that it may lead to the destruction of the very things that has made Japan great.

Deficits and Credit Risks

PNWE: Will exchange rates by themselves eliminate the trade deficit the United States has with Japan? If not, what actions will Japan take to reduce the deficit?

Huddleston: I don't feel that exchange rates will eliminate the trade deficit with the United States unless those rates became absolutely grotesque or extreme. I think that the deficits can only be eliminated by action that the United States takes, and I don't think that we should expect or look to Japan to cure the ills that created the U.S. deficit. That's our responsibility and, to date, I don't think that we have perceived the problem to be as serious as it is. I think we still talk without taking action. American business has hardly prepared itself to compete with that of Japan, either on Japanese soil, on third-party playing fields, or in the United States.

Way: Several years ago, when the yen substantially increased in value and the dollar fell, the proverbial wisdom was that this would soon solve all of the trade problems. I think that the expectation of the majority of commentators was that within a period of two or three years there would be a substantial reduction in the trade deficit. This has not happened. As a matter of fact, the trade deficit has at times in the past two years increased rather than decreased. The projections now are that even though the difference between the yen and the dollar is substantial, it may not be significant enough to reduce the trade deficit, and therefore the exchange rates themselves don't seem to be a determining factor. So the question, I suppose, is: What factors are going to affect the trade deficit if the exchange differences are not the sole consideration?

Roehl: I think it's dangerous to call this a bilateral problem. Let's suppose that Japan does nothing right and doesn't make any changes in the accessibility to its own market. It's feasible that someone could not do well in Japan and yet be able to compete in third-country markets, where there is a kind of level playing field. It could be that these third markets will be where the battle is fought in terms of more export jobs for Americans.

Huddleston: The U.S. capital capacity to compete at a third-country level, compared to Japan, has lessened, particularly with the strengthening of the yen. We have the example of Chemical Bank following the procedure of Wells Fargo and withdrawing their representative offices from Indonesia, which is one of the most populous nations in the world, and seeing Japan become more active in Indonesia. So I am not particularly optimistic that the United States has the capital capacity today to be competitive with Japan in third countries.

PNWE: If the Japanese government does it right, will it foster a kind of freewheeling creativity or will the government clamp down and try to get hold of economic change?

Kumon: If what government thinks to be right doesn't coincide with what private business thinks is right, government policy will not have a strong effect. It's too limited.

Huddleston: What if there is a crisis? Another oil shock? Would that strengthen the hand of the government?

Kumon: Yes, of course, to a certain extent. The existence of external conflicts, frictions will also help the government. Take the case of Toshiba Machine, for instance. External conflicts gave the government a good chance to increase its control.

PNWE: Is there any concern in Japan about the size of the U.S. external debt and what that amount implies about us as a credit risk? We've seen Bank of America put together a loan package from Japanese investors and apparently pay a high price to get those funds. Are we about to start paying a higher price? Should we expect that Japan will place certain conditions on further capital flows that will come into the United States?

Kumon: There is strong concern, yes, of course. Japan is asking itself: Can we really continue to lend money to the United States? It's a big problem.

Huddleston: You have to remember, too, that we've dismantled the capital structure of the life insurance industry in Japan in the last 18 months. The fall of the dollar caused them to lose $18 billion of their capital in 1987. They made the investment in the dollar. They didn't have to. The insurance industry went to the ministry and got permission to put more of their assets into the dollar. The ministry encouraged them. If they had been a U.S. corporation and this had happened, they would be bankrupt now, but because of the nature of the accounting system in Japan, where you don't have to revalue your assets, they have hidden assets that they sell off to build back up their capital position. But how long do you continue to do that?

Way: And it isn't just financing. Many states, including Washington, are looking to Japanese industry to provide employment opportunities for their residents. Many states are looking to Japan not just for money, but for economic activity, industrial ac-

To me, Japan should not and cannot achieve prosperity, freedom, and peace at the sacrifice of other people, other countries, other societies. Japan should include in its future the welfare of other societies and the international system as a whole. That is a responsibility that Japan should learn to take on for the future.
—Shumpei Kumon

tivity. There's competition now for Japanese capital, Japanese industrial production, and Japanese know-how. More technology is now coming out of Japan than out of the United States.

Change and the Consumer

PNWE: There are inefficient sectors in the Japanese economy that need attending to. What changes might we see in these sectors in the years ahead?

Roehl: What we're talking about is managing the cost of change. Within Japan's expanding sectors, there's experience in dealing with change, but, because of the restrictions in some markets, there's very little experience in managing change. You talk to NTT managers, and you'll find that they share the same problems as AT&T managers. They don't want to have to make an adjustment. It seems to me that government policies are going to have to put some pressure on these sectors to change, even if Japan protects those sectors from foreign entry for a period of time.

PNWE: Can you give us an example?

Roehl: NTT. Japan will have to force it to compete with other firms in the Japanese economy, at the same time slowing the pace of change of foreign entry into those markets. At least until there's some sort of experience built up. The same thing might be done in terms of a subsidy structure for rice, even while you ban imports of rice. You apply gradual pressure by reducing the subsidies to farmers so that there's a gradual change. And one of the things the government is going to have to do, it seems to me, to manage the cost of change is to keep a delicate balance between putting continued pressure on these sectors that need to change, and, at the same time, giving them enough opportunity so that they don't feel overwhelmed.

PNWE: In the past, the Japanese consumer has been to some extent the forgotten man in Japanese society. If Japan does it right, are we going to see the Japanese consumer gain influence?

Roehl: In many ways, I'd much prefer to be a Japanese consumer.

Huddleston: Amen.

Roehl: If I buy something in Japan, I know that there's a much higher likelihood that it's going to work. I can buy products that I don't have to carry back to the store.

Huddleston: I agree. The middle class lives much better in Japan than it does in the United States.

Roehl: My time is valuable, and when things don't work, they cost me time. In a sense, I'm willing to pay for some of the inefficiency that exists in Japanese distribution in exchange for something that works smoothly. On the one hand, I want to push Japanese consumers so that prices come down and there's more price competition between firms. But, on the other hand, I don't know what would happen to all of the other things that are good about being a Japanese consumer if we were to force Japan into a U.S. model.

Way: What is so interesting in Japan is the shift from the savings-oriented person to the consumer. The younger people, it seems to me, are becoming very good consumers in the sense that they are willing to spend their money and their parents' money for things that their parents refused to buy for themselves. Younger people are driving more automobiles than older people. They buy more clothes. The variety of their food is far greater than the rice bowl that their parents are satisfied with. Once the older generation dies out, this shift in consumerism is going to lead to a very different structure within Japanese society.

Huddleston: The numbers point to some healthy consumers there. The per capita earned income is higher for a Japanese than an American, and the per capita spendable income is considerably higher in Japan than it is in the United States.

PNWE: At this time, we'd like each of you to make a closing statement and simply tell us the one or two things that have been gnawing away at you as we've talked here.

Huddleston: I want to emphasize that if I were a middle-class Japanese, I would rather be living in Japan than in the United States. I think that Japanese society offers the consumer a better life in the quality of service that he receives and in personal security and education for his children.

Way: The one thing that I would like to see is a Japan that is able to internationalize itself and become acceptable throughout the world without giving up the characteristics that have made it famous. I really believe that we have a tremendous amount to learn from the way the Japanese do things, and I think that they are offering us alternative choices that we should seriously consider.

Roehl: I would hope that as Japan picks up ideas on how to do it right, it maintains some willingness to learn from the outside as well. I hope that Japan doesn't become so confident that it only looks internally for solutions to economic and social issues.

Kumon: To me, Japan should not and cannot achieve prosperity, freedom, and peace at the sacrifice of other people, other countries, other societies. Japan should include in its future the welfare of other societies and the international system as a whole. That is a responsibility that Japan should learn to take on for the future.

PNWE: Does Japan think that way now?

Kumon: Not yet, but more Japanese are becoming aware of the necessity and the importance of expanding into world affairs. They have been close-minded for such a long time. Now they have gradually come to realize that to survive they cannot be like that anymore.

REGION WATCH

Economic Developments in the Pacific Northwest

The nation entered its sixth year of economic expansion in November 1987. This unprecedented peacetime expansion was confirmed in the GNP report for the fourth quarter of 1987, which showed a 4.5 percent real growth rate for the quarter and a 2.9 percent rate for the year.

The Bureau of Labor Statistics indicated that the 1987 manufacturing productivity growth rate of 3.6 percent, combined with a falling dollar, produced a decline in unit labor costs in this country, compared with the unit labor costs of our major trading partners. Falling costs provide an explanation for the manufacturing revival that is becoming apparent. This increased output is going to foreign markets: real exports grew by 12.8 percent in 1987. Imports grew by only 7.1 percent during the year, so the overall result was an $11.5 billion reduction in the foreign trade deficit. While the trade deficit is still huge by historic standards, the changes in both import and export growth add up to better markets for U.S. manufacturers.

Recession or growth?

While these are positive indicators of economic health, there are some signs of an upcoming recession. The leading economic indicators have fallen for three consecutive quarters. A number of industries nationwide are approaching their capacity limits, and three of these industries—paper, aerospace, and lumber and wood products—are important in the Pacific Northwest. Consumption spending, especially on durables, took a big tumble in the fourth quarter and that drop, combined with a big build-up in inventory investment, is likely to produce a bleak first-quarter GNP report.

Vigorous export growth, a revival of consumer spending (perhaps in response to the implementation of the second phase of the new personal income tax law), and an expansionary monetary policy could pull the economy away from a recession in 1988. Alternatively, delayed reaction to the stock market crash, a period of inventory liquidation, and slower growth of exports could combine to produce a recession in the first half of the year. Perhaps it's not too important which side of the zero marker the economy comes down on; in any case, the economy will be moving at slow speed early in 1988.

Ironically, the possibility of a national recession comes at a time when the Pacific Northwest is beginning to perform very well compared to the rest of the country. The Pacific Northwest states showed strong employment growth in 1987, especially in manufacturing (Table 1). In Washington, employment figures were up in every industrial sector in the 12 months prior to November 1987. Such widespread strength is unusual; the last time it happened was in June 1977. In Oregon and Idaho, broad gains were also reported as employment grew and unemployment fell during the year.

Pacific Northwest revives

Regional ports are reporting large increases in export traffic. The Port of Seattle reported a 33 percent increase in export traffic in the first 10 months of 1987, compared with the same period of 1986. Two additional steamship lines have established service out of Portland and export a variety of goods to Australia and Japan. Import substitution is becoming a more common activity at regional ports. In the Port of Tacoma's foreign trade zones, for example, U.S.-manufactured accessories are being installed in Asian-built General Motors and Mazda vehicles.

Boeing's $19.36 billion in new orders just barely topped last year's level of $19.23

Table 1: Employment Growth in the Pacific Northwest
percent change, November 1986 to November 1987

	MANUFACTURING	TOTAL WAGE AND SALARY
WASHINGTON	5.9	4.3
OREGON	4.3	4.1
IDAHO	3.8	1.7

SOURCE: Employment Departments, Washington, Oregon, and Idaho

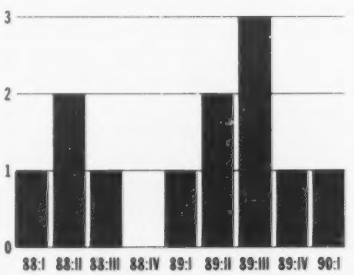
Economic Forecast Panel

Panel Forecasts
median annual percent changes

	REAL GROSS NATIONAL PRODUCT	IMPLICIT PRICE DEFLATOR
1987 actual	2.9	3.0
1988	2.0	3.7
1989	1.0	3.9

	NOMINAL PERSONAL INCOME	NONAGRICULTURAL EMPLOYMENT	MANUFACTURING EMPLOYMENT
WASHINGTON			
1987 est.	5.6	3.3	2.5
1988	6.5	2.8	2.0
1989	6.0	2.6	1.6
OREGON			
1987 est.	5.5	3.4	2.4
1988	6.0	2.5	1.0
1989	6.0	1.8	1.0
IDAHO			
1987 est.	3.8	0.8	0.5
1988	4.0	0.7	1.0
1989	5.0	0.8	1.2

When Will the Next Recession Begin?
number of panel members by quarter



billion. While 1987 revenues were $1 billion lower than those of 1986, Boeing's order backlog provides some assurance of a continued high level of employment in the aerospace industry in Washington. Remember, though, that backlogs were at record levels prior to the 1969-71 Boeing recession.

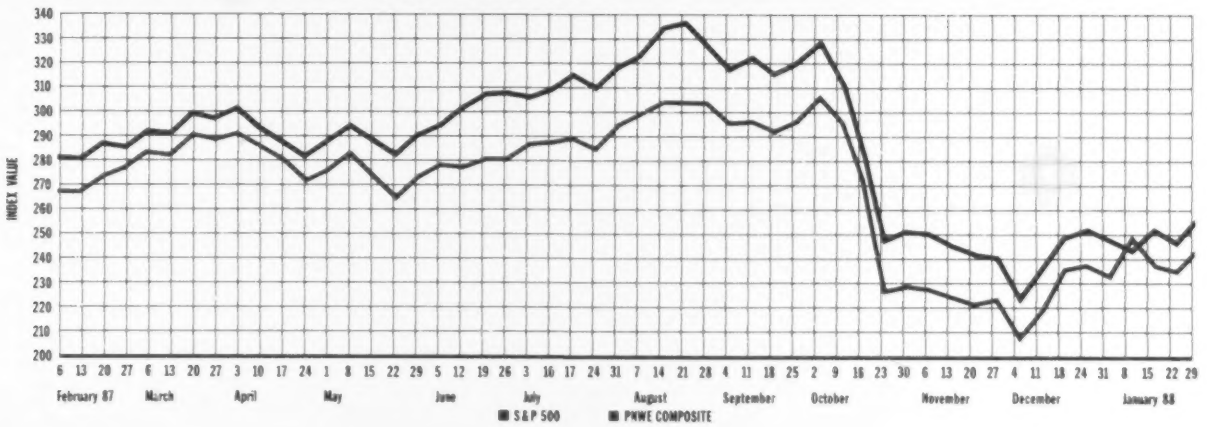
Other regional industries are doing well. Forest products companies are running at full capacity. Softwood lumber production in the coastal region was up 11.5 percent in the first 10 months of 1987, compared with the same period of 1986; in the inland region, production was up 8 percent. Log exports from Oregon ports increased 13 percent in the first nine months of 1987, compared with the figures for 1986, and exports from Washington ports were up 22 percent. Electricity consumption by the aluminum companies during 1987 increased by more than 50 percent, indicating that this important industry had one of its best years of the decade. In early 1988, regional smelters were running at about 90 percent of total capacity. Computer software companies are poised for another round of growth.

A very important factor explaining the resurgence of the Pacific Northwest is the weak dollar. Regional commodity producers and manufacturers are finding ample opportunities overseas, and the increase in outbound traffic passing through our ports, much of it originating in other parts of the country, is providing a boost for transportation and related service businesses. As long as the dollar remains weak, this export-oriented region is likely to perform well compared with the rest of the country.

The revival of commodity and manufacturing markets that results from the weak dollar has the added benefit of spreading the growth from the service-oriented metropolitan areas to the smaller cities and rural areas of the region. Aluminum smelting, log exports, and agricultural activities profit from the weaker dollar, and those enterprises are located in some of the most depressed parts of the region.

The Tri-Cities area is an exception to this optimistic regional outlook. The waste repository program is being phased out, and the N-reactor seems headed for a permanent shutdown. Thousands of highly skilled workers are preparing to leave the state, and will do so unless something is done soon to rescue this nuclear-dependent regional economy.

S&P 500 and the PNWE Index, February 6, 1987 – January 29, 1988



Index Values*

LAST FRIDAY OF	PNWE COMPOSITE	MANUFACTURING	TECHNOLOGY	UTILITIES	RETAIL FINANCE AND OTHERS
FEBRUARY 1987	276.29	284.67	302.00	254.23	265.12
MARCH 1987	288.03	301.67	315.47	252.99	275.01
APRIL 1987	271.76	282.37	315.19	235.24	259.67
MAY 1987	273.64	267.54	351.24	236.50	278.45
JUNE 1987	280.19	276.39	345.57	241.90	285.69
JULY 1987	294.51	294.45	327.10	237.45	314.72
AUGUST 1987	303.31	305.60	345.36	248.10	315.60
SEPTEMBER 1987	296.33	299.16	356.82	238.36	303.62
OCTOBER 1987	229.11	215.87	276.22	223.20	237.64
NOVEMBER 1987	223.27	215.17	242.99	222.90	227.38
DECEMBER 1987	233.56	227.48	282.15	213.27	236.57
JANUARY 1988	244.14	235.47	281.04	230.78	250.88

*All PNWE indexes set equal to the S&P 500 index of 210.88 on January 3, 1986

Pacific Northwest Regional Economic Conference

Twenty-Second Annual Meeting
April 28-30, 1988
Theme: *The Location and Timing of Economic Development: Understanding Regional Disparities*

Red Lion Inn, Riverside
Boise, Idaho

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Natural Gas in the Pacific Northwest: Regulation and Economics

The natural gas industry provides the energy to meet the space heating and process heating demands of more than 840,000 customers in the Pacific Northwest. Just how well it satisfies these demands depends on production and transportation costs, competition from other fuels, and regulatory factors. What are the dynamics of the natural gas industry and what are the long-term prospects for this industry and its customers?

Origins of the Industry

The use of **manufactured gas** for lighting in homes and businesses was common in the United States by the late 19th century. At that time, gas was produced locally from coal or oil and distributed within cities by pipeline networks. Two Pacific Northwest entrepreneurs secured a franchise from the territorial legislature in 1859 to set up a gas manufacturing plant in Portland and arranged for the shipment of a manufacturing plant around the Horn on a sailing vessel from New York. By 1860 the fledgling Portland Gas Light Company was lighting city streets with gas made from coal mined in Nanaimo, B.C. It later switched to Australian and Japanese coal, which was imported as ship ballast. Manufactured gas was available for street and residential lighting in Seattle by 1873, in Tacoma by 1885, and in Spokane by 1887.

Electric lights eventually eroded the market for gas lighting, but new applications for space and water heating and cooking provided existing gas systems with new markets. By the early 1950s, manufactured gas was distributed through local pipeline systems run by utility companies in a dozen or so cities in western Oregon and Washington.

Natural gas, which was first considered a waste by-product of oil production, began to displace manufactured gas as early as the 1920s. The first interstate pipeline system, linking gas fields in Texas and Oklahoma to the densely populated and highly industrialized regions in the northcentral and northeast sections of the country, offered cheaper and more reliable supplies of natural gas. The pipeline system steadily spread to the rest of the country. In 1956 the Pacific Northwest Pipeline Company completed a 1,500 mile pipeline connecting this region to the abundant San Juan gas fields in Colorado and additional reserves in Wyoming. The Northwest was the next-to-last corner of the country to be connected to natural gas supplies; only Florida lagged behind. A year after the arrival of San Juan Basin natural gas in the Pacific Northwest, a second pipeline was completed, bringing in an additional supply of gas from fields in Alberta.

All of the investor-owned retail utilities in the region are served by a single wholesaler, Northwest Pipeline Corporation, which is headquartered in Salt Lake City, Utah. The company is a corporate descendant of the Pacific Northwest Pipeline Company and a subsidiary of the Tulsa, Oklahoma, Williams Companies, an energy conglomerate. Northwest Pipeline currently obtains 50 to 60 percent of its supplies from the San Juan Basin and 40 to 50 percent from Canada.

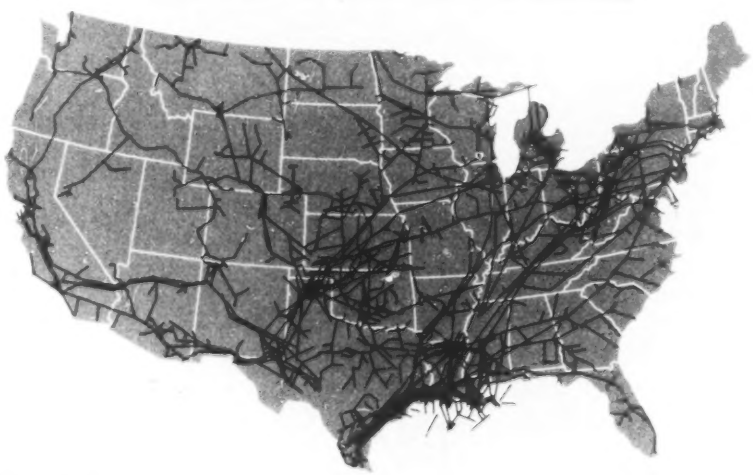
Northwest Pipeline, like pipelines throughout the country, is subject to regulation by the U.S. Federal Energy Regulatory Commission (FERC), which sets rates and conditions of service for the interstate transportation and sale of gas. Northwest Pipeline is the sole source of gas for Washington Natural Gas in the Seattle area, for Cascade Natural Gas in the rest of Washington (except Spokane) and in portions of Oregon, for Washington Water Power in Spokane and in adjacent areas of Idaho, for Intermountain Natural Gas in southern Idaho, and for CP National and Northwest Natural Gas in Oregon. Each of these investor-owned distribution utilities is a natural monopoly that has its prices and conditions of service regulated by state commissions. Northwest Pipeline also serves a few small publicly owned distribution systems in the region.

The Dimensions of the Industry

Natural gas is used for space and water heating, cooking, and a variety of process heat applications. In these markets, gas competes with petroleum products, electricity, wood, and other energy forms. The factors that affect this competition vary over time, as do the relative market shares of the competing fuels. Since the consumption of any energy form is dependent on the availability of capital equipment, market shares change only as equipment is replaced or as new firms and households are formed.

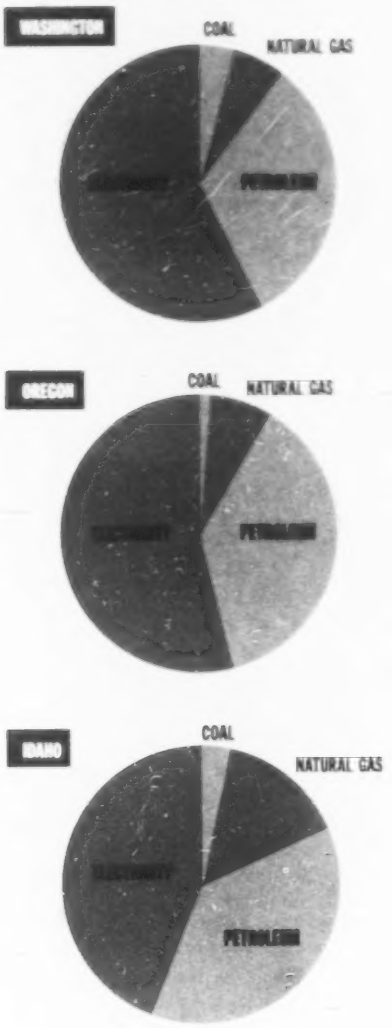
Natural gas is the third most used energy form in the Pacific Northwest, lagging be-

Interstate Natural Gas Pipeline Network of the United States



SOURCE: American Gas Association

Figure 1: Energy Consumption in the Pacific Northwest, 1982



SOURCE: U.S. Department of Energy

hind electricity and petroleum (Figure 1). Recent oil price declines and the deregulation of natural gas supplies have made these two energy forms less expensive, while high interest costs on generating projects have forced electricity rates up. Electric and gas utility analysts maintain that oil and natural gas are gaining market share at the expense of electricity. Natural gas currently dominates the market for new residential connections in the Seattle area and competes vigorously with residual oil in industrial markets.

Only six investor-owned distribution companies provide the bulk of retail gas service

Table 1: Investor-Owned Natural Gas Company Revenues
Thousands $

	RESIDENTIAL	COMMERCIAL	INDUSTRIAL
WASHINGTON			
Cascade Natural Gas	21,928	36,324	64,652
Northwest Natural Gas	2,220	4,442	18,231
Washington Natural Gas	128,940	98,198	73,736
Washington Water Power	31,563	27,414	34,210
OREGON			
Cascade Natural Gas	5,960	8,154	7,250
CP National Corp.	18,637	11,972	6,511
Northwest Natural Gas	109,772	74,657	86,481
IDAHO			
Intermountain Gas	40,785	25,255	21,553
Washington Water Power	5,921	6,291	6,847

SOURCE: Public Utility Commissions in Washington, Oregon, and Idaho

in the region, so the dimensions of natural gas use can be described by the quantities sold by each company to residential, commercial, and industrial sectors (Table 1). About 735,500 residential customers throughout the Pacific Northwest constitute $358 million in annual revenues for the investor-owned natural gas distribution companies (Table 2). The average residential bill comes to $486 per year. A total of 103,700 commercial or small industrial customers provide $293 million in revenues and pay an annual average of $2,800. Less than 4,300 large industrial customers account for revenues of $319 million, implying an average yearly gas cost of $75,000. Some industrial customers are very large; one industrial account provides as much as one-third of a particular distribution company's industrial revenues.

The small number of large industrial customers makes these volume users especially important to the fortunes of the gas distributors. The demands of industrial customers are regular over time; less of their load is used for seasonally and diurnally varying space heating purposes. Their needs are thus more predictable and controllable through contractual arrangements, factors that make them desirable customers. If these large consumers shift to another fuel or sharply increase or decrease their level of industrial activity, the impacts on the gas companies are significant. Gas distribution companies carefully watch the economic trends and regulatory actions that affect the industrial market for natural gas. At the same time, large industrial customers are sensitive to rate changes and tend to have more flexibility in their choice of fuels than do the smaller gas users. They, too, have reason to watch regulatory actions closely.

The National Regulatory Background

The major regulatory issue at present is the open-access transportation of gas through interstate pipelines under FERC Order 436 and its successor, Order 500. Before Order 436 was put into effect, consumers purchased gas from local distribution companies, who in turn purchased gas at wholesale from interstate pipeline companies (Figure 2). Only the pipeline companies dealt directly with the gas producers. Order 436, announced on October 9, 1985, offers gas producers and final users the opportunity to contract directly with each other and use the existing pipeline system to transport gas from the producers' wells to the users' boilers. The effect of this order is to replace a monopolistic situation with a more competitive one and to add regulated transpor-

Table 2: Pacific Northwest Natural Gas Industry Characteristics

REVENUES ($000s)	
Residential	$357,726
Commercial	$292,707
Industrial	$319,391
THERMS* (000s)	
Residential	554,258
Commercial	527,342
Industrial	802,620
NUMBER OF CUSTOMERS	
Residential	735,500
Commercial	103,770
Industrial	4,290

*One therm = 100,000 Btu

SOURCE: Public Utility Commissions in Washington, Oregon, and Idaho

tation services to provide a linkage between large customers and gas producers.

In this situation, interstate pipeline companies have extraordinary market power, and, to prevent them from taking undue advantage of their position, they have been regulated. Under FERC Order 436, each interstate pipeline company that chooses to offer open-access transportation can become a "common carrier," which means that it agrees to provide transport services to any party willing to pay the tariffs set by the regulatory commission. The order also sets up processes for entering the transportation business and makes the approval of FERC much simpler for pipeline companies to obtain.

Using the open-access transportation process, local distribution companies can provide gas transportation services between the interstate pipeline and the specific site of industrial users. In this way, they can charge industrial customers who choose to contract directly with producers for the local transportation of gas. Transportation rates are set by state regulatory commissions and may provide a profit margin per therm (100,000 Btu) of gas similar to what the local distribution companies earn when they buy gas from the interstate pipeline and sell it to the industrial user. These distribution companies can, therefore, offer industrial customers low-priced spot market gas, while retaining their traditional merchant role for other customers. By offering to transport gas for industrial customers, the local distribution companies may prevent industrial customers from building their own spurs direct to the interstate pipeline, thereby bypassing the local pipeline altogether. Such spurs are technically feasible along the Interstate 5 corridor and elsewhere in Oregon and Washington.

Local distribution companies can also enter the spot market directly, buying low-priced gas from producers rather than from an interstate pipeline. This directly purchased gas can be offered to any of the local distribution company's customers. In this way, Order 436 can produce savings for residential and commercial, as well as industrial, customers.

The choice between merchant and transportation roles is a complex one for both the interstate and the local distribution pipeline companies, and, as the FERC has noted, the economic and regulatory factors involved are "not economic theory but bustling commercial reality." The national spot market for natural gas has grown rapidly and has become highly competitive since industry deregulation began in 1978.

As the result of an interconnected national pipeline grid and alternative pipeline routes to many major metropolitan areas, a producer can market gas nationwide, and a local distribution company or an industrial gas user can buy supplies from any gas field—provided that nondiscriminatory access to the transportation network can be guaranteed. The advantages to industrial natural gas users are obvious; a more competitive market keeps gas rates down in the long run. Why, however, would gas producers, pipeline companies, or local distribution companies want to open up their businesses to competitive forces? One reason is that the nationwide pipeline system has a number of alternative interstate routes between producers and distribution companies. Order 436 forces these interstate pipelines to compete with each other. Each competing pipeline, realizing that its competitors could offer transportation services, would generally prefer to enter the market itself rather than see the entire market go to a competitor.

Another important reason for both producer and pipeline company interest in Order 436 is the current gas surplus or "bubble." Gas consumption has declined nationally in recent years, forcing prices down. Oil prices have also fallen, compelling gas producers and pipelines to lower prices to remain competitive. The Order 436 process offers a convenient mechanism for both interstate and local pipelines to provide low-cost spot market gas to price-sensitive customers.

The Controversy Over Order 500

Order 436 has led to a major shift in the way interstate pipeline companies do business, and the transition to that new way of doing business has proved quite complicated. Contracts between interstate pipelines and gas producers have traditionally been long-term "take-or-pay" agreements, which means that a pipeline company commits to pay for a certain annual amount of gas—regardless of whether it actually takes the gas from the supplier. With the industrial resale market fading rapidly and generally declining energy prices, many pipelines have experienced increased take-or-pay deficiencies. In fact, $7 billion worth of take-or-pay deficiencies are now on the books of gas producers and interstate pipelines nationwide.

Arguments over how to handle take-or-pay deficiencies resulted in a court challenge to Order 436. FERC responded with a new ruling, Order 500, which took effect January 1, 1988. This order states that any producer that sells gas directly to an industrial customer and transports it on a pipeline with a take-or-pay deficit must give the pipeline company credit on its take-or-pay account in the amount of the sale.

These credits give the pipeline companies a way to reduce their use of the higher-priced gas based on contracts negotiated in the energy-scarce years. By substituting spot market gas for gas sold under older contracts, the pipelines can save more than 50 percent. It was as if FERC suddenly handed $7 billion of discount coupons to the interstate pipeline companies.

While this ruling has assuaged the pipeline companies' concerns about the take-or-pay problem, it also appears to have destroyed much of the producers' incentive to offer gas supplies directly to industrial customers. As reported in the December 8, 1987 *Wall Street Journal*, producers regard pipeline take-or-pay deficits as assets—unfulfilled promises to buy relatively high-priced gas. The producers aren't disposed to simply forgive these contractual promises or to offer surplus gas in the spot market at significantly lower prices. Some producers may withdraw from the spot market in order to protect their contractual rights.

Impacts on the Pacific Northwest

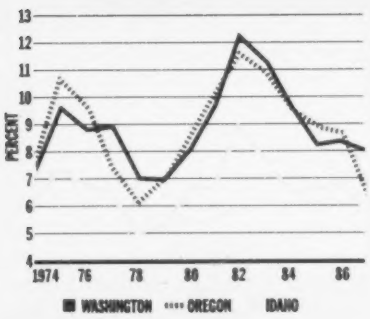
While the interest in Order 436 at a national level is understandable, the situation in the Pacific Northwest is somewhat different. Only one interstate pipeline serves the region, and there is no competition to ensure consumer access to least-cost gas supplies. However, the Northwest Pipeline Corporation does have one powerful incentive to offer transportation services under Order 436: to keep the industrial customers in its local service territories. Many industrial customers have the ability to switch from gas to oil using their existing equipment or to convert to coal with some capital investment. Because oil prices have fallen during the last two years, a number of large industrial gas customers have used less gas and more residual oil in their dual-fuel boilers. In the northwest, many forest products companies also use wood as fuel, and they would use more if relative prices favored the use of wood as a fuel rather than as an input to finished products.

Robert Ridgley, the president and CEO of Northwest Natural Gas, described the con-

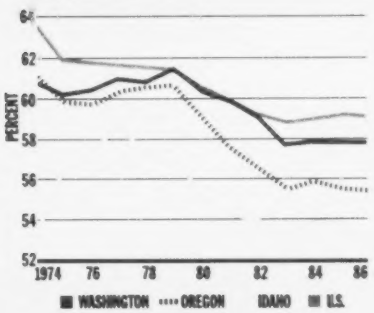
(continued on page 14)

REGION WATCH

UNEMPLOYMENT RATES[1]

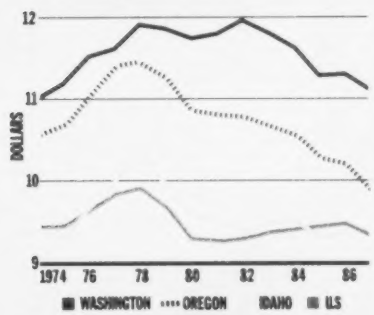


WAGES & SALARIES AS PERCENT OF PERSONAL INCOME[1]

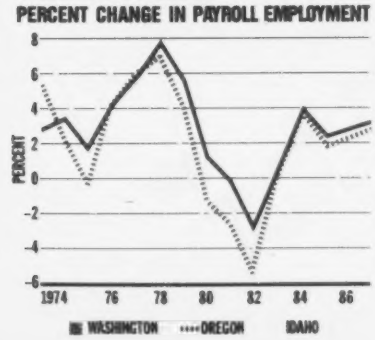


REAL HOURLY EARNINGS

of manufacturing production workers, in 1984 $



PERCENT CHANGE IN PAYROLL EMPLOYMENT



LABOR FORCE[2]

In thousands

YEAR	WA	OR	ID
1974	1,530	1,015	358
1975	1,561	1,039	369
1976	1,621	1,068	392
1977	1,691	1,130	410
1978	1,808	1,196	428
1979	1,937	1,217	436
1980	1,984	1,295	424
1981	1,996	1,337	422
1982	2,024	1,324	419
1983	2,069	1,341	421
1984	2,051	1,335	427
1985	2,087	1,316	433
1986	2,179	1,360	431
1987	2,229	1,388	430

EMPLOYMENT[2]

In thousands

WA	OR	ID
1,420	939	336
1,412	929	342
1,481	966	365
1,544	1,047	384
1,684	1,124	407
1,806	1,134	414
1,828	1,188	397
1,806	1,205	395
1,779	1,171	382
1,838	1,196	390
1,857	1,210	400
1,917	1,200	405
2,000	1,245	403
2,056	1,302	406

UNEMPLOYMENT[2]

In thousands

WA	OR	ID
109	76	22
149	110	27
140	102	26
143	83	26
124	72	21
131	83	22
156	107	27
190	132	27
245	153	37
231	145	31
194	125	27
170	136	28
179	135	28
174	86	24

AVERAGE WEEKLY EARNINGS[3,7]

manufacturing production workers
in dollars

YEAR	WA	OR	ID
1974	203.84	194.31	171.99
1975	225.23	212.35	185.08
1976	248.68	236.12	204.72
1977	267.74	257.46	228.73
1978	297.11	281.97	253.36
1979	323.85	304.92	265.04
1980	361.34	329.57	280.11
1981	405.07	355.13	311.09
1982	432.36	379.76	316.35
1983	444.24	397.17	335.85
1984	458.47	409.25	351.18
1985	453.57	406.35	355.70
1986	463.74	412.23	369.01
1987	479.28	413.56	370.54

AVERAGE WEEKLY HOURS WORKED[3,7]

manufacturing production workers
in hours

WA	OR	ID
38.9	38.8	39.0
38.7	38.4	38.8
39.1	38.9	38.7
39.2	38.6	39.3
39.3	39.0	38.8
38.6	38.5	38.3
38.4	38.1	37.1
38.8	37.5	37.8
38.5	37.9	36.7
38.9	38.9	37.4
38.8	39.2	37.6
39.0	38.7	37.8
39.4	39.0	38.2
39.9	39.2	38.2

NOMINAL EARNINGS PER HOUR[3,7]

manufacturing production workers
in dollars

YEAR	WA	OR	ID
1974	5.24	5.01	4.41
1975	5.82	5.53	4.77
1976	6.36	6.07	5.29
1977	6.83	6.67	5.82
1978	7.56	7.23	6.53
1979	8.39	7.92	6.92
1980	9.41	8.65	7.55
1981	10.44	9.47	8.23
1982	11.23	10.02	8.62
1983	11.42	10.21	8.98
1984	11.61	10.44	9.34
1985	11.63	10.50	9.41
1986	11.83	10.57	9.66
1987	12.00	10.55	9.70

REAL EARNINGS PER HOUR[3,4,7]

manufacturing production workers
in 1984 dollars

WA	OR	ID
10.91	10.43	9.18
11.11	10.55	9.10
11.47	10.95	9.54
11.58	11.30	9.86
11.91	11.39	10.28
11.85	11.19	9.78
11.72	10.77	9.40
11.79	10.70	9.30
11.97	10.68	9.19
11.81	10.56	9.29
11.61	10.44	9.34
11.23	10.14	9.09
11.25	10.05	9.19
11.03	9.70	8.92

NONAGRICULTURAL WAGE AND SALARY EMPLOYMENT, 1987[2,5]
by Industry
In thousands

	WA	OR	ID
TOTAL NONAGRICULTURAL EMPLOYMENT	1,839.3	1,094.0	336.5
MANUFACTURING	316.8	204.9	53.5
DURABLE GOODS	222.4	148.1	26.4
Lumber and Wood Products	48.4	67.4	13.0
Furniture and Fixtures	3.7	2.5	NA
Stone, Clay, and Glass Products	6.5	3.4	0.9
Primary Metals	11.2	9.3	NA
Aluminum	7.4	NA	NA
Fabricated Metals	10.4	10.2	2.0
Machinery, Excluding Electrical	16.3	15.5	5.3
Electrical Equipment	13.1	13.4	3.2
Transportation Equipment	106.0	11.1	NA
Aerospace	92.8	NA	NA
Other Transportation Equipment	13.2	NA	NA
Instruments and Related Products	10.7	12.1	NA
Other Durable Goods	4.7	3.1	2.1
NONDURABLE GOODS	94.3	56.8	27.0
Food and Kindred Products	31.9	23.8	15.9
Textiles, Apparel, and Allied Products	5.9	4.3	NA
Paper and Allied Products	16.5	9.2	1.8
Printing and Publishing	20.1	12.7	4.3
Chemicals and Allied Products	11.5	2.1	3.3
Other Nondurable Goods	8.5	NA	1.8
NONMANUFACTURING	1,522.6	889.1	283.0
MINING AND QUARRYING	3.0	1.4	2.5
CONSTRUCTION	87.3	34.5	14.2
TRANSPORTATION, COMMUNICATION, AND UTILITIES	98.4	58.3	18.4
TRADE	453.1	276.3	84.0
Wholesale Trade	110.5	69.1	20.4
Retail Trade	342.6	207.2	63.6
FINANCE, INSURANCE, AND REALTY	107.0	71.7	24.2
SERVICE AND MISCELLANEOUS	418.3	242.4	67.7
GOVERNMENT	355.6	204.5	71.9
Federal	78.5	38.2	11.9
State and Local	285.1	174.4	60.0
Education	148.6	97.0	33.1
Other	136.5	77.3	26.9

AVERAGE HOURLY EARNINGS, 1987[3,6,7]
by Industry
In dollars

	WA	OR	ID
MANUFACTURING	12.00	10.55	9.70
DURABLE GOODS	NA	10.59	NA
Lumber and Wood Products	10.92	10.66	9.93
Furniture and Fixtures	NA	8.94	NA
Primary Metals	12.56	12.13	NA
Fabricated Metals	11.20	9.40	NA
Machinery	9.67	NA	NA
NONDURABLE GOODS	NA	10.45	NA
Food and Kindred Products	9.82	8.64	8.16
Textiles, Apparel and Allied Products	NA	6.30	NA
Paper and Allied Products	NA	15.49	NA
Printing and Publishing	NA	11.71	NA
Chemicals and Allied Products	14.75	NA	NA
NONMANUFACTURING	NA	NA	NA
MINING AND QUARRYING	NA	NA	13.89
CONSTRUCTION	16.16	13.71	13.19
TRANSPORTATION, COMMUNICATION, AND UTILITIES	NA	13.01	NA
TRADE	9.42	8.57	7.45
Wholesale Trade	NA	10.57	8.44
Retail Trade	NA	7.44	6.90

NOTES:
1. Bureau of Economic Analysis, U.S. Department of Commerce.
2. Washington State Employment Security Department, State of Oregon Employment Division, and State of Idaho Department of Employment.
3. Washington State Employment Security Department, State of Oregon Employment Division, and U.S. Bureau of Labor Statistics, Employment, Hours, and Earnings.
4. Computed using the U.S Consumer Price Index for urban wage earners and clerical workers (CPI-W) from the U.S. Bureau of Labor Statistics.
5. Excludes workers in labor disputes.
6. Washington data on fabricated metals, machinery, chemicals, and trade industries deviate slightly from BLS definitions, and hence are not strictly comparable to data from other states.
7. Washington's 1987 annual averages are calculated using monthly data from January through November.

Sources of Information on Employment and Earnings

There are several alternative employment and payroll data series available to people interested in labor force statistics. Due to methodological differences, care must be taken to use the data appropriately. Monthly data reflect pronounced seasonal changes and should be seasonally adjusted where interest centers on cyclical changes. The following summary outlines the distinctive characteristics of the major series and provides a guide to sources of more detailed information.

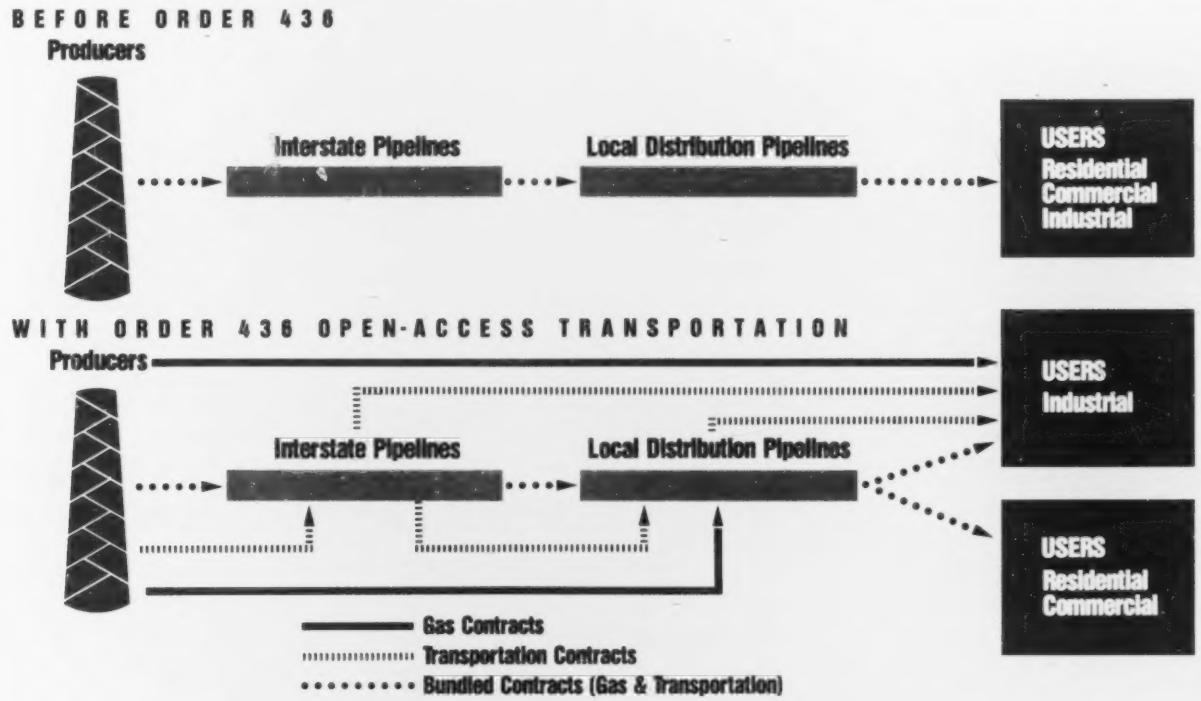
LABOR FORCE STATISTICS. Resident civilian labor force and employment statistics provide information about the size of the labor force, the number of persons employed, and the number of persons unemployed. By definition, the labor force is the sum of the employed and unemployed. The employed portion of the labor force, which includes the self-employed as well as part- or full-time employees, is estimated on a place of work basis using surveys and adjusted to a place of residence basis using decennial census reports. State estimates of unemployment are based on state unemployment insurance (UI) records with adjustments to include workers not covered by the UI program in each state, including estimates of new entrants to the labor force not yet employed. These data do not provide industry detail, but are available for states, counties, and selected SMSAs on a monthly basis.

PAYROLL STATISTICS. Nonagricultural wage and salary employment, also called payroll employment, is estimated each month on the basis of information provided by a sample of cooperating establishments on data collection forms called "shuttle schedules." The data are collected each month by state employment agencies. These data are available for states, counties, and selected SMSAs on a monthly basis. The shuttle schedules also provide monthly data on average hours and earnings for production and related workers in selected industries. Although providing considerable detail by industry, this series does not cover farm workers, the self-employed, unpaid family workers, or military personnel.

UNEMPLOYMENT INSURANCE STATISTICS. The quarterly "covered employment" statistics include employment and payroll data by industry for employees who are covered by state UI programs. Although providing more extensive industry detail than the monthly payroll statistics, the data do not include all workers covered by state insurance programs. Comparability over time and among states is not assured because of eligibility differences.

OTHER EMPLOYMENT RELATED DATA SERIES. In addition to the different measures of employment described above, other data series are available to describe the demographic features of workers, wage rates, occupational distributions, and other characteristics of the working and unemployed population in each state. Further information may be obtained by contacting the statistical division of the state employment agencies: the Employment Security Department, Labor Market and Economic Analysis Board in Olympia, Washington; the Department of Human Resources Employment Division, Research Statistics Section in Salem, Oregon; and the Department of Employment, Bureau of Research Analysis in Boise, Idaho.

Figure 2: Natural Gas Contracting Before and After FERC Order 436



(continued from page 11)

sequences of oil price declines and FERC Order 436 in a 1986 speech: "The most dramatic development in the energy business over the past few months has been the collapse in worldwide oil prices.... The free fall in oil prices has led to major changes in the way natural gas is marketed. It has also prompted sharp reductions in price to dual-fuel industrial customers... [and] has led distributors to begin acting as supply aggregators for their large customers, with transportation tariffs replacing the traditional vendor–vendee relationships." Ray Norwood, the senior vice president of Washington Natural Gas, stated: "We cannot turn the clock back. Under FERC 436 we earn a transportation tariff on gas we transport for industrial customers; this offers us the opportunity to keep industrial customers on-line."

The response of regional industrial customers to the Order 436 process has been enthusiastic. A substantial portion of 1986 total gas movements in the Pacific Northwest consisted of gas transported for customers: Cascade Natural Gas (3 percent), Northwest Natural Gas (10 percent), and Washington Water Power (13 percent). Washington Natural Gas's 1986 report to the state regulatory commission shows that the company didn't transport gas for its customers, but that it did buy 12 percent of its 1986 supply in the spot market, thereby lowering gas costs to all of its customers. Ray Norwood indicates that Washington Natural Gas will continue to actively seek lower-cost gas supplies in the spot market to keep its industrial customers on-line as buyers of purchased gas, not just as clients for transported gas.

Industrial gas users have formed a new association to keep abreast of the changing regulatory environment and to represent the interests of users before regulatory commissions. The Northwest Industrial Gas Users* has 33 members in Washington, Oregon, and Idaho in various industries, including aluminum, food processing, and pulp and paper. Mary Ann Hutton, the organization's executive director, indicates that industrial gas users are seeking an "unbundling" of gas services, which means that they want gas supply, transportation, interruptability, storage, balancing, and standby service to become separate items in their negotiations with local distributors, interstate pipeline companies, and gas producers. These gas users are also seeking lower, cost-based rates for unbundled services, rather than the full-margin rates many distribution companies are suggesting. Order 436 offers gas customers a mechanism for unbundling many gas services and introduces new competitive forces into the gas supply industry. The association states that this competition will benefit not only dual-fuel gas users, but also industries that use natural gas as a feedstock (as in ammonia production) and small gas users that cannot afford dual-fuel installations just for the purpose of negotiating a better deal with the gas company.

Weyerhaeuser Company's energy supply manager, Dick Tyler, indicates that the Order 436 process represents a "double-edged sword" for large industrial customers. There is the opportunity to seek out lower-priced energy supplies, but the search is expensive and time-consuming compared to the old practice of just paying the monthly utility bill. In addition, getting the process to work has turned out to be a "regulatory can of worms." Tyler indicates that while he favors the new, more deregulated world he might have a different view five or so years down the road, when the current gas surplus disappears.

One reason for the feeling that open-access transportation represents a double-edged sword is that industrial gas users who

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choose to contract directly for their gas supplies will also be taking on the responsibilities for ensuring a timely and adequate supply of gas at their industrial sites. These responsibilities, which belonged to the distribution company in the traditional method of doing business, bring with them the benefit of lower prices. The costs of this new method of buying energy, however, include negotiating deals and managing delivery times and quantities.

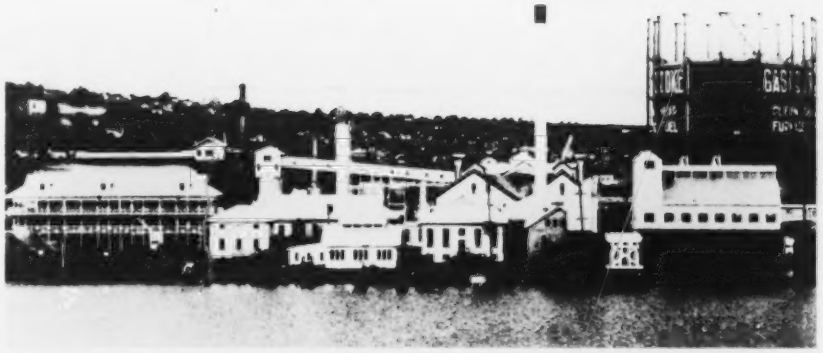
Norwood of Washington Natural Gas indicates that it is especially important for retail gas companies in Washington to have access to the Order 436 process because low-priced residual oil can still be burned in this state, whereas environmental restrictions prohibit the use of high-sulfur oil in California and Oregon. Industrial customers in Washington have more options and more opportunity to cut back on their use of gas. Lower-priced gas supplies under Order 436 help local distributors prevent fuel switching.

The effects of Order 436 on the Northwest Pipeline Corporation have been dramatic. The natural gas company's sales to industrial consumers have fallen from 283 trillion Btu in 1984 to 196 trillion Btu in 1986, while its gas transportation service volume rose from 101 trillion Btu in 1984 to 196 trillion Btu in 1986. Roughly half of the company's industrial business in 1986 was in the transportation, rather than the purchase and resale, of natural gas.

Northwest Pipeline's disagreements with FERC on how to handle existing take-or-pay deficiencies have led to two disruptions in the company's interim open-access transportation service—once from August 1986 to February 1987 and again beginning in May 1987 and continuing to the present. While the company has stated its commitment to open-access transportation, it is unwilling to offer the service unless its take-or-pay deficiencies can be offset by spot market gas transported under the Order 500 program.

At this time, Northwest Pipeline no longer offers transportation services pending FERC rulings on a settlement proposal filed in September 1986. The proposal addresses such issues as gas supplies, the imposition of a supply inventory charge, a standby charge, and the modification of existing transportation credits. The company wants to eliminate its take-or-pay denciencies and to maintain its ability to supply industrial customers who are unsuccessful in finding the gas supplies necessary to meet all of their needs.

FERC has recently ruled on these proposals, but as of this writing, the rulings have not been publicly released. Order 500's generic treatment of the take-or-pay deficiency issue suggests that Northwest Pipeline's specific proposals are generally consistent with FERC policy. Northwest Pipeline's settlement proposal is one of many pending before the FERC, which is slowly working its way through these cases. About half of the nation's interstate pipelines are now offering open-access transportation services under Order 436, and many of the others have company-specific settlement proposals pending before the commission.



In response to pressure from the Seattle community, the Seattle Gas Company, in the early 1930s, installed taller smokestacks and other pollution-control devices at its Lake Union plant. The facility was also completely repainted, as can be seen in this photograph, which was taken from north Capitol Hill. About 20 years later, the plant closed down due to the arrival of natural gas in the area.

The Long-Term Outlook for Natural Gas

The supply of natural gas has changed dramatically during the last decade or two, alternating between periods of scarcity and abundance. The current gas bubble is expected to continue another three to five years. What is the long-term outlook for gas supplies and prices?

Total proven reserves within the Lower 48 have not increased since the mid-1970s, and annual production has outstripped additions to reserves in most of these years. Consequently, today's natural gas market conditions are not so much due to an improved supply of gas as to a more flexible regulatory approach and to a slackening in the rate of growth for all energy forms in recent years. Natural gas has also benefited from the cost problems of the electric power industry, which have made both gas and petroleum attractive alternatives. The American Gas Association indicates that current proven reserves should provide an adequate gas supply, without the need for major rate increases, for the rest of the century.

After that time, the fortunes of the industry depend on the success of exploration and development companies in finding and marketing new fields. Major gas discoveries are likely to be in unconventional sources, such as deep geopressurized formations and various "tight formations" that will require expensive new technologies to develop and produce. While extensive supplies may be available from such formations, the costs of developing them will be quite high, leading to a long-term forecast for increasing natural gas costs.

What that scenario implies for market share and growth of the industry is not clear. Competitive fuels are also likely to experience increasing costs in the long run. The electric power utilities don't have major cost-reducing technologies on hand for future use and face rising costs per unit of output for the construction of large-scale generating plants. Superconductor technology may change the electricity-generating picture, but that technology may be decades away. Petroleum suppliers continue to deal with an unstable cartel, as well as expensive exploration opportunities in frontier regions, which implies a rising cost curve in the future. The interplay of these competitive forces, as well as consumer reaction to what are likely to be rising real costs for all energy forms, will determine the long-term growth path of the natural gas industry.

Employment and Establishment Growth Patterns

The small business sector of the economy has received increased media and governmental attention in recent years. Two presidents have organized White House conferences on small business issues. The State of Washington created a small business ombudsman within the Department of Trade and Economic Development and, together with the U.S. Small Business Administration, supports a network of small business advisors located at community colleges around the state. Economic development officials at the state and local levels tout the job-creating ability of small businesses.

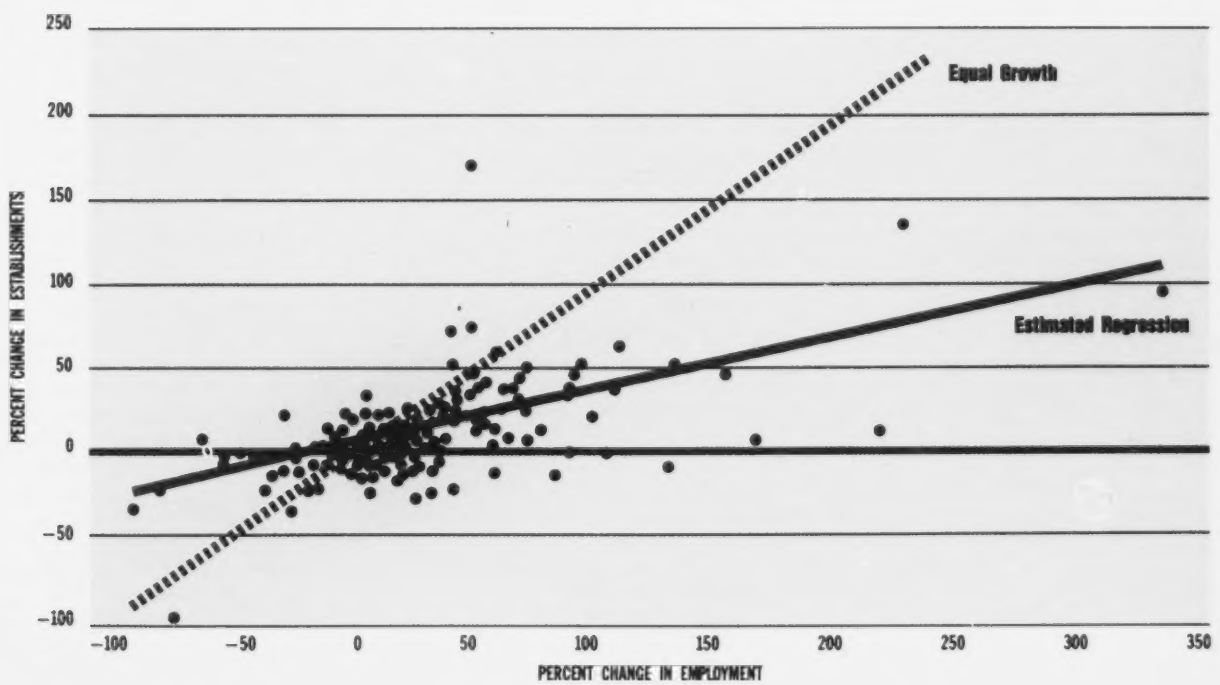
The increasing prominence of small businesses in economic development policy led the *Pacific Northwest Executive* staff to investigate the relationship between employment and establishment growth in the Pacific Northwest. To assemble a sample of areas with disparate economic histories, we obtained data from the Bureau of the Census *County Business Patterns* series on establishments and employment by county (or borough) for a five-state region (Washington, Oregon, Idaho, Montana, and Alaska). We then examined the relationship between employment and the formation of establishments in each county during the 1975 through 1985 interval, taking note of changes in definitions and coverage.

The Bureau of the Census defines an establishment as a business in a single physical location where services or industrial operations are performed at any time during a calendar year. Employment for every such establishment is counted in the mid-March pay period. Establishments operated by sole proprietors with no paid employees are not counted in either the establishment or the employment counts.

As a working hypothesis, we supposed that the growth of employment should be closely correlated with the growth in the number of establishments. More specifically, if the growth of employment is strongly dependent on the creation of new establishments, we might expect that the counties with rapid growth in employment would also be the counties with rapid growth in establishments.

To see what happened in the 199 counties in our sample, we plotted the percentage change in employment in each county against the percentage change in the number of establishments (Figure 1). Contrary to our working hypothesis, we found that employment growth generally outruns the growth in establishments. A regression line (see box) fitted to these observations has a slope of 0.3; that slope is statistically different from both 1.0 (equal growth in employment and establishments) and zero (no relationship between employment and establishment change). According to the slope coefficient, a 10 percent change in employ-

Figure 1: Employment and Establishment Change in the Pacific Northwest



ment is associated, on average, with a 3 percent change in the number of establishments. This means that increases in employment are associated with a relatively small change in the number of establishments. Growth comes primarily from the expansion of existing firms or from the emergence of relatively large (that is, large relative to the size of the county economy) new firms.

We recognize that our data do not track the history of individual establishments over time, so we do not know whether the birth of relatively large firms or the expansion of existing firms is responsible for the observed results. Because the data we used do not include sole proprietors with no paid employees, the true number of business start-ups, including sole proprietors, is larger than our data showed, and part of the lost employment in declining counties may be offset by sole proprietorships. However, the data do suggest that relatively large firms are responsible for high employment growth rates.

The regression line's positive intercept (0.7) implies that counties with zero employment change, and many counties with a slightly negative employment change, experienced an increase in establishments. Why are those counties gaining establishments even though there has been no employment gain? MIT Professor David Birch observes in *Job Creation in America* that a common reason for the creation of a business is the sheer desperation of being thrown out of work. Our results for counties with negative employment changes are consistent with Birch's survey results.

Another important aspect of these results is that large percentage changes in employment and establishments are by no means confined to the more populated counties. Some of the standout performers are small boroughs in Alaska. Bristol Bay went from 97 employees and 19 business establishments in 1975 to 260 employees and 43 establishments in 1985. In percentage terms, the gains are 168 percent for employment and 126 percent for establishments. Contrast that performance with King County (the Seattle area), which grew from 412,000 to 621,000 employees (51 percent), and from 26,901 to 44,239 establishments (64 percent). In percentage terms, King County's performance is solidly in the middle of the pack (Figure 1), while Bristol Bay is one of the growth champions.

Implications

Many economic development officials have switched from "smokestack chasing" (enticing out-of-state plants to a site with various tax rebates, site preparation commitments, bargain utility rates, and other inducements) to a greater emphasis on encouraging the formation and growth of small businesses. This change in emphasis can be seen at the state and local levels around the Pacific Northwest. For example, Wayne Fawbush, co-chair of Oregon's Joint Trade and Economic Development Committee, released a report titled *Small Is Bountiful* in January 1988. He said that "we should concentrate on small businesses, not for sentimental reasons, not for political reasons, but because that's where the jobs are. Big businesses have lost jobs, small businesses have created them. It's as simple as that."

Economic development groups attribute their new approach (away from attracting out-of-state manufacturers) to seminal studies done by Professor Birch, who claims that "Galbraith and others who think that big business is the American economy don't seem to realize fully that the bubbly, yeasty, creative segment is the small businesses segment" and that from 1981 to 1985 very small firms "created about 88 percent of all net new jobs."

Small business creation is important, for it is from such seedlings that large enterprises develop. However, the observed relationship between establishment growth and employment growth suggests a significantly different thought. Those counties where employment growth is most rapid did not depend on a multitude of new business creations. Instead, it appears that a small number of relatively large firms provided most of the employment growth.

Economic development officials should note that either the expansion of existing firms or the arrival of new firms in an area could be responsible for the relationship between employment and establishment growth. Rather than focusing exclusively on creating new business establishments, development groups should strive to foster the expansion of firms already in the area. In the lightly populated counties, such firms might be "small businesses" by U.S. Small Business Administration standards, but they are often the firms that have passed the infancy stage and are poised for another round of growth. The economic development literature suggests that such firms sometimes require outside advice to successfully manage their next expansionary phase. In addition, the critical role of relatively large firms suggests that viable opportunities for smokestack chasing should not be passed up. One new factory can provide an enormous boost to a county.

Employment and Establishment Change Regression Results

Equation (1) shows the results of regressing establishment change on employment change and a constant for the period from 1975 through 1982 for 199 counties and boroughs in the Pacific Northwest. Both the constant and the coefficient on employment change are significantly different from zero, and the null hypothesis that the true coefficient on the employment change variable is 1.0 is rejected by examination of the confidence interval around the estimated coefficient.

The Bureau of the Census changed the way it counted establishments in 1983; instead of counting an establishment if it was in existence in December of the year, the bureau counted it if it was in existence with at least one employee at any time in the year. This change in measurement means that more establishments were counted from 1983 on. Because of this change, we estimated separate regressions for the periods from 1975 through 1982, equation (2), and from 1983 through 1985, equation (3). The qualitative results are the same in equations (2) and (3) as in equation (1), and the formal hypothesis tests yield similar results. However, the estimated coefficient on employment change is lower on these two equations than in equation (1). The results of equations (2) and (3) are presumably more accurate than those of equation (1).

Exxyy = percent change in establishments for years xxyy
Nxxyy = percent change in employment for years xxyy

(1)	**E7585**	=	.696	+	.520	**N7585**	$R^2 = .55$
	(t)		(13.5)		(15.5)		
(2)	**E7582**	=	.701	+	.323	**N7582**	$R^2 = .34$
	(t)		(16.0)		(10.1)		
(3)	**E8385**	=	.773	+	.267	**N8385**	$R^2 = .54$
	(t)		(16.0)		(10.1)		

The Glass Ceiling: An Invisible Barrier

The executives were relaxed and in a good mood. Plans were set for the forest products company's annual executive retreat, which was always held at a lodge in the same Northwest fishing village. The men were looking forward to a carefree weekend, a time to fish and set goals for the upcoming year. Everyone was in a jovial mood—except Elaine Brown, the only woman executive in that division. Brown was livid: she had not been invited on the trip.

"You understand, Elaine," one colleague said. "Our wives just wouldn't be comfortable with you coming along. Besides, you probably don't like fishing, right?" Brown tried not to let her emotions show. She took a deep breath and, when the meeting was over, marched down the hall feeling frustrated and angry.

"I was one of the top three women in that company," says Brown, who asked that her real name and the name of her former employer not be used. "The men weren't aware of it, but they were discriminating against me. And it wasn't just the retreat; I had a slim—if not zero—chance for further advancement."

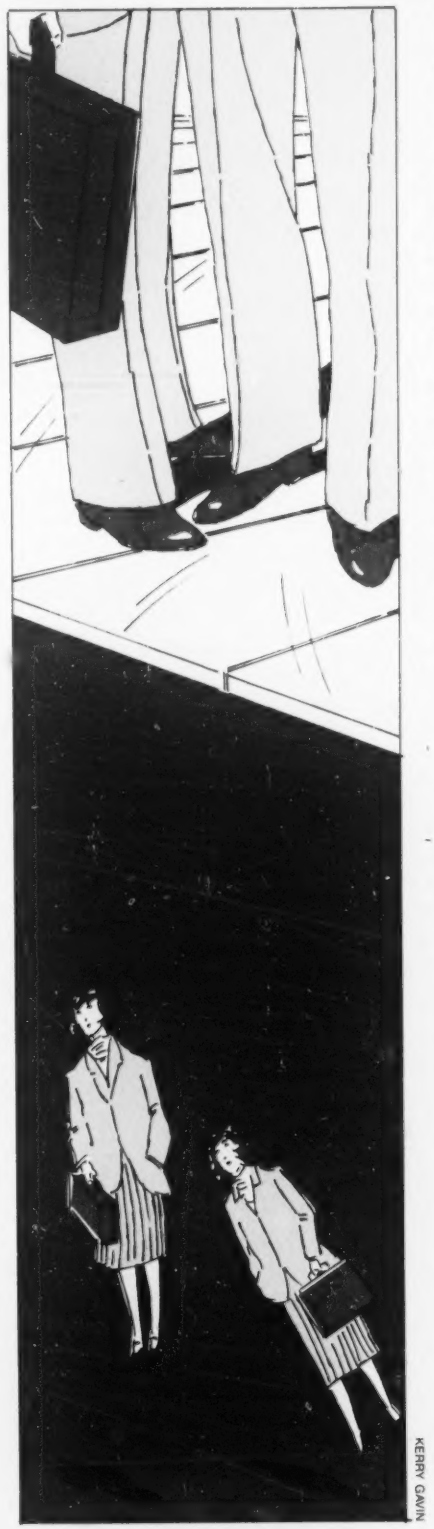
In Elaine Brown's case, her good performance was no guarantee of future success. She was dead-ended in midmanagement, kept from advancing by an invisible barrier called the glass ceiling.

In most Northwest corporations, women rarely break through this obstruction. Only a token few are senior managers or hold seats on corporate boards. A survey in the *Los Angeles Times* reported that women now hold 30 percent of executive and managerial jobs. However, those 3.5 million positions are largely in the entry and midlevel ranks. In the forest products company that employed Brown, for example, secretaries in charge of typing pools were given managerial titles in an effort to skew the number of women in management.

Acceptable Behavior

The barriers blocking women from top management are varied, but according to many executives, a prime factor is that many male executives just don't feel comfortable with a female peer. Jerome Poole, the president of Jantzen Corporation, says, "Even though times are changing, history remains a problem."

Sarah Hardesty, the author of *Success and Betrayal*, writes, "No matter how good you are, if the men at the top don't feel comfortable with a woman, she can't enter the club. . . . It's fit, not performance, that brings the ultimate rewards." Executive recruiter Hugh Lineweaver of Management Search in Portland adds: "The person chosen for senior management has to fit in every way: in technical skills, in people skills, in management skills, and in getting along. We call it chemistry."



KERRY GAVIN

by Joyce De Monnin

In order to be accepted by their male peers, "some women have aped male behavior," says Larry Engelgau of Management Recruiters. "I remember being at a party with some corporate executives. Even though it was cold outside, the boss grabbed a basketball and went out to toss some hoops. Some of the guys went out to join him, as did the woman in the group. It seemed like she was trying to fit in. If a woman isn't one of the guys, she has a problem, but if she acts too masculine, derogatory comments will be made about her."

To be promoted to senior management, concludes Ann M. Morrison, Randall P. White, and Ellen Van Velsor in their 1987 book, *Breaking the Glass Ceiling*, women "have to show their toughness and independence and at the same time depend on others. . . . They have to be seen as different, 'better than women' as a group. But they can't go too far and forfeit all traces of femininity because that makes them too alien to their superiors and colleagues." The authors illustrate acceptable behavior for executive women by drawing two slightly overlapping circles. One circle represents male behavior; the other, female behavior. The overlap is the zone of acceptable behavior for executive women. In reality, the authors assert, female corporate executives are much like their male counterparts in personality and behavior, but "they are perceived quite differently."

Line Jobs or Staff Jobs?

It's not simply performance that will help women reach top management; it also depends upon where a woman stands in the corporate organizational chart. According to Engelgau, most women cluster in positions such as personnel and public relations, which don't offer a career path to the CEO chair.

Portland consultant Alice Armstrong, the founder of the Institute for Professional and Managerial Women in Portland, says, "Women refuse to believe that you've got to play according to the corporation's rules if you want to get ahead and that you need to stick with line jobs, which are the fastest routes to promotions." Line jobs typically are in

that Keeps Senior Women from the Top

sales, product development, and manufacturing and include positions that add to the profitability of a company.

"Many women get bought off with glamorous staff jobs," Armstrong states. These positions support the product line and include occupations such as advertising, public relations, and personnel. "I remember talking to a young woman who worked for a bank," Armstrong recalled. "She was next in line to be a branch manager and was suddenly offered a job as a marketing liaison. It would mean travel, an expense account, and a raise. She was excited about the opportunity. But I told her that she was being bought off with a dead-end staff position. She decided against the job offer and told me later that her supervisors were flabbergasted when she told them she would wait for the next branch management position. Women aren't the only ones who don't understand these rules."

In many corporations, advancement comes from moving around within the company, taking on a variety of jobs and challenges. When the company is large, a new opportunity often means a geographic relocation, something that many women balk at doing. "We'll have a company that really wants to hire a woman to groom for top management," says Lineweaver, "but we rarely find women who are willing to move. That factor eliminates the opportunity. Most women don't want to move out to a plant in the boondocks."

Sexism In the Work Place

One of the worst cultural biases that still exists, according to many women, is sexism. At a fall 1987 Women + Business goal-planning retreat, the board members, who include some of Seattle's top executive women, cited sexism in the work place and the glass ceiling as two major concerns. Women + Business believes that "sexism is a given for many older men and women, but sexism is also alive and well among the young."

"You have racial prejudices, but it is simply taboo to act on them in today's society," says Malcolm Forbes, Jr., in *Success and Betrayal*. "On the sexual side, it may be taboo to acknowledge prejudices, but they are very deeply ingrained. You have a harder time breaking down sexual barriers than racial barriers in this country."

How does sexual prejudice operate in a corporate setting? Corporations tend to shy away from commenting on the sexism implied by the lack of women in upper management ranks. Neither do they like to discuss the double standard that gives men the opportunity to prove their mettle, while women wait and hope to be rewarded for a job well done.

Joan Jensen, a manager for a Northwest utility, says, "I get great performance reviews, but when the department manager is away, my male junior colleague has been put in as acting manager. What frustrates me most is that men get promoted in our organization as a matter of course, while women are promoted only when they work twice as hard and exhibit exceptional performance. I don't see much chance for me to reach upper management. Very few women get there, and they break through to that executive level by using their political connections."

Another source of frustration for Jensen, and others, is that "women top managers are usually single, committed to the job and nothing else." In a March 1986 special report on corporate women, the *Wall Street Journal* reported that 52 percent of executive women were single or divorced—compared to 5 percent of executive men. And about half of executive women have no children.

Four Women: Hard Work and Superior Performance

Beverly Gonzales, the president of Sound Savings & Loan since 1984, manages a portfolio of $30 million. Now in her mid-40s, Gonzales started out as a teller for First Federal Savings & Loan in Ridgewood, California. She showed a natural flair for banking and an insatiable appetite for reading. "I devoured how-to books and self-improvement books and volunteered to take on new tasks at work just for the challenge," she says.

Although she didn't have a college degree, Gonzales got promoted to assistant controller. She started attending trade meetings and making contacts. When she realized that she was stuck in that job, she found a more advantageous opening at a smaller savings and loan in a new town, applied for, and won the position. "Although it was a 35 percent increase in pay for me, I was probably a bargain," Gonzales recalls. She worked 12-hour days and lived in a hotel until her family could join her. "Being a corporate officer got my adrenalin going," she says. While Gonzales pursued her career opportunities, her marriage fell apart. She divorced and continued to make career changes until she moved to Seattle.

"I experienced sexism in the organizations I worked for. My attitude is that if people let sexism stand in the way of hiring me, it's their loss. I concentrated on my goals and worked to achieve them." When sidetracked by stodgy employers, Gonzales kept her eye on the next promotion—wherever it might be located. "My career goals had no geographic boundaries," she says.

Marsha Congdon, 40, also found that relocation was a factor in getting promotions. As vice president, Oregon, for Pacific Northwest Bell, she now manages $700 million in revenues and 5,000 employees. "My willingness to travel was very important. It was one of the reasons I've been promoted. I had to be willing to do the same things the men did," she says.

After receiving her master's degree in business, Congdon started with Pacific Northwest Bell as a management trainee in 1973. She learned from a personnel officer that company executives usually started in the North Dakota operations department. "So I went," she said. During the next 10 years, Congdon "learned to climb telephone poles, splice cables, and repair telephones."

In Rugby, North Dakota, Congdon managed the largest number of employees (3,100) in town. She joined the chamber of commerce and was the first woman on its board of directors. But Rugby's top business group was the Lions, which was closed to women members. As a guest, however, she could attend, so local businessmen took turns inviting her to each meeting.

Congdon, like many women executives with both career ambitions and children, recognizes the role of a strong support team in a woman's climb to upper management. "In addition to having people in the organization who are pulling for you, you need family and extended family to help," she says.

E. Kay Stepp, 42, a president of Portland General Electric, says that promotions to top management often depend upon people skills. "You need to demonstrate an ability to get along with people," she says. Stepp was a college public relations director before she decided to reposition her professional skills toward a career with more mobility and opportunity for advancement. She completed a master's degree in business and communications and was hired by PGE as a human resource development specialist in 1978.

Now in charge of $650 million in revenues and 1,300 employees, Stepp is a classic example of a corporate executive whose performance caught the eye of a powerful

How Do The Numbers Compare?

Seattle Corporations with 500 or More Employees

Corporation	Number of Employees	Male Executives	Female Executives	Male Directors	Female Directors
Ackerly Communications	650	12	0	N/A	N/A
Airborne Freight Corp.	4,100	15	0	9	0
Alaska Air Group, Inc.	3,050	4	1	9	1
Alaska Airlines	3,000	15	1	9	1
Alpac Corp.	700	6	1	8	0
Boeing Company	108,000	18	0	13	0
Burlington Northern Inc.	45,000	15	0	14	1
Darigold	1,600	12	0	8	0
Diamond	500-600	4	0	3	0
Farwest Fisheries	4,000	3	0	3	0
First Interstate Bank of Washington	2,400	21	1	16	1
Gai's Seattle French Baking Co.	575	4	0	N/A	N/A
Horizon Air Industries	940	11	1	6	0
King Broadcasting	900	4	0	6	3
Lamonts	1,200	5	1	N/A	N/A
Lockheed Ship Building	1,600	7	1	N/A	N/A
Loomis Corp.	5,000	4	0	6	0
Lynden	555	4	1	6	0
Marine Construction	2,000	5	1	N/A	N/A
Mayne Nicklass Inc.	6,000	4	0	N/A	N/A
Nordstrom, Inc.	14,000	15	7	10	2
Northern Commercial Co.	600	9	1	7	0
Pacific Northwest Bell	15,464	9	2	12	3
Peoples Bancorporation	2,212	4	0	13	1
Peter Pan Seafoods	950	7	0	6	0
Plum Creek Timber	1,650	6	0	3	0
Rainier Bancorporation	5,488	10	0	17	2
Rainier National Bank	4,951	10	0	13	1
REI	1,700	6	1	8	5
Safeco Corp.	11,138	8	0	12	1
Safeco Insurance	6,750	26	0	4	0
Sea Alaska Corp.	1,250	7	2	5	2
Seafirst Corp.	7,200	11	0	19	2
Seafirst Bank	8,600	37	4	20	2
Seattle Standard Corp	10,000	3	1	3	0
Seattle Times	1,900	15	1	10	0
Seattle Trust Savings Bank	673	9	1	15	0
Simpson Paper	2,889	11	0	6	0
Uniguard Security	960	12	0	N/A	N/A
VWR Corp.	1,565	7	1	11	0
Washington Engergy Co.	1,017	5	0	8	1
Washington Mutual Savings Bank	950	9	0	15	1
Washington Natural Gas	1,017	18	0	8	1
Weisfield's, Inc.	600	6	0	6	0
Wright Schuchart	3,500	5	0	2	0

mentor. Robert Short, PGE's chief executive officer, hand-picked Stepp to assist him in designing and running seminars aimed at improving internal communications and morale. "Her organizational capabilities and ability to moderate sessions were remarkable," he says. Short was so impressed with Stepp's organizational skills that he kept moving her around the company until she had managed two-thirds of PGE's employees. Finally, she was tapped for a president position in 1987.

Christine Anderson, 38, the owner of Pacific Select Management in Renton, manages five hotels and two restaurants with an operating budget of $15 million. She started her career as a restaurant cashier, then rose to convention sales and catering before becoming the director of marketing.

She was promoted to general manager by Jim Warjone, the joint-venture manager of the investment group that owned the hotel. Warjone says that Anderson "instituted a series of innovative controls on labor, food and liquor, and finance. She also had a flair for marketing. Other Sheratons began to call Chris, asking for help." In 1983 Anderson was named one of the top 15 Sheraton Hotel managers worldwide. Several years later, the hotel owners launched a hotel management firm with Anderson at the helm. She bought them out in the spring of 1986.

"Chris always brings a consistent and energetic response to the table," says Warjone. "It's also a positive and creative effort. No task is ever rejected or put aside. She's also an excellent negotiator—she can play poker with the best of them."

When she took over as general manager of the Renton Sheraton, Anderson began a 60-mile daily commute, so that her four teen-agers could stay in the same high school. Although not everyone she worked with found her as able and deserving as Warjone did, Anderson says, "I look at sexism or dealing with tough people as an attitude I can control. If I walk around with a chip on my shoulder, I have a problem. It's up to me to compensate for it, to take responsibility for my own life. I believe that you're only a victim if you choose to be."

The Line of Succession

One of the areas in which women are rapidly achieving top slots is the family-owned business. According to Patricia Frishkoff, director of the Family Business Center at Oregon State University's College of Business, more family business founders recognize that "commitment and competence, not just birthright, are deciding factors in the line of succession." No definitive figures are available, but Frishkoff's work has led her to conclude that significantly more daughters are now following in their fathers' footsteps.

In addition, many women who become disillusioned with corporate opportunities will take their talent elsewhere or start their own businesses. A study in the August 1986 issue of *Fortune* reported that one out of four women managers is leaving America's companies. Bureau of Labor statistics reveal that there were 2.8 million self-employed women in 1985, a 43 percent increase from a decade earlier. In the same period, the number of self-employed men rose only 9.8 percent, to 6.5 million. A 1986 U.S. government report, *The State of Small Business*, announced that the annual gross receipts of female-owned businesses were three times those of male-owned businesses. In the Northwest, women are starting businesses at nearly four times the rate of men.

In the corporate world, retailing is one field that tends to accept women. Wally Smith, the president of Recreational Equipment, Inc. states, "We look for performance and ability, regardless of gender. We want performers. Period." James Nordstrom, the

president of Nordstrom, Inc., concurs: "There is no difference between male and female executives." He admits that many male executives don't feel comfortable with female peers, adding, "As long as they get the job done, so what?"

Women are also making inroads into a number of traditionally male fields. At the Jantzen Corporation in Portland, women now hold one-third of the road sales jobs. "When I started with Jantzen 30 years ago, no women were traveling for the company. Road sales leads to sales management and on up the ladder," says Jerome Poole, president. "Things began changing about 20 years ago, and we've had more women in key slots every year." The company now has one woman on its executive team.

The lack of a technical background has blocked women from jobs in high tech, construction, and engineering. According to the Society of Women Engineers, just 14 percent of all students graduating with engineering degrees in 1986 were women. But that's up nearly three times from 20 years ago. In addition, the U.S. Department of Labor reports that women are entering traditionally male jobs in record numbers. In 1985 women made up 45 percent of accounting graduates, 41 percent of business and finance, 36 percent of computer science, and 35 percent of law graduates.

Breaking the Glass Ceiling

Companies that impose restrictions on the upward mobility of women may find themselves losing talented employees. Elaine Brown, the forest products manager who wasn't invited to the company's executive retreat, was spotted by a head-hunter. When she was offered a job with a different company, she didn't hesitate to make the move.

Certainly, if the glass ceiling is to become a thing of the past, its demise will be the result of a partnership between corporations and women. Companies can help, according to *Breaking the Glass Ceiling*, by providing "desirable job assignments and a package of programs designed to make the work place less hostile [to women]." That package may include day care facilities, maternity leave, and flexible hours, a boon to working parents.

Women can prepare for leadership, the book says, by "being exceptionally and consistently outstanding." The authors offer five commandments for aspiring women:

►Be able.
►Be seen as able.
►Help others to help you.
►Prepare to be lucky.
►Know what you want.

Jim Borden, the personnel manager of Safeco Corporation, advises career women to "show an interest in management and continue to develop as a professional," and to stay with their company a long time. "Women have been joining [Safeco's] ranks just since 1970, a relatively short period of time. Have patience to still be with the company when an opening occurs."

Beverly Gonzales, Marsha Congdon, E. Kay Stepp, and Christine Anderson are innovative, energetic executives whose personal skills match their technical expertise. They take risks and are willing to make significant career changes—be it moving to a new geographic location or reorienting their skills toward a line job.

As more women near the ranks of upper management, the cracks in the glass ceiling will undoubtedly grow larger and, perhaps, begin to give way. As Congdon states, "I think women are going to have to break through the glass ceiling and then help make the hole bigger for more women to enter." Executive women should certainly understand the sacrifices that other women are making to advance in their professions. And if these successful and ambitious executives are willing to play a mentor role, willing to offer a helping hand to their junior colleagues, the glass ceiling will one day disappear.

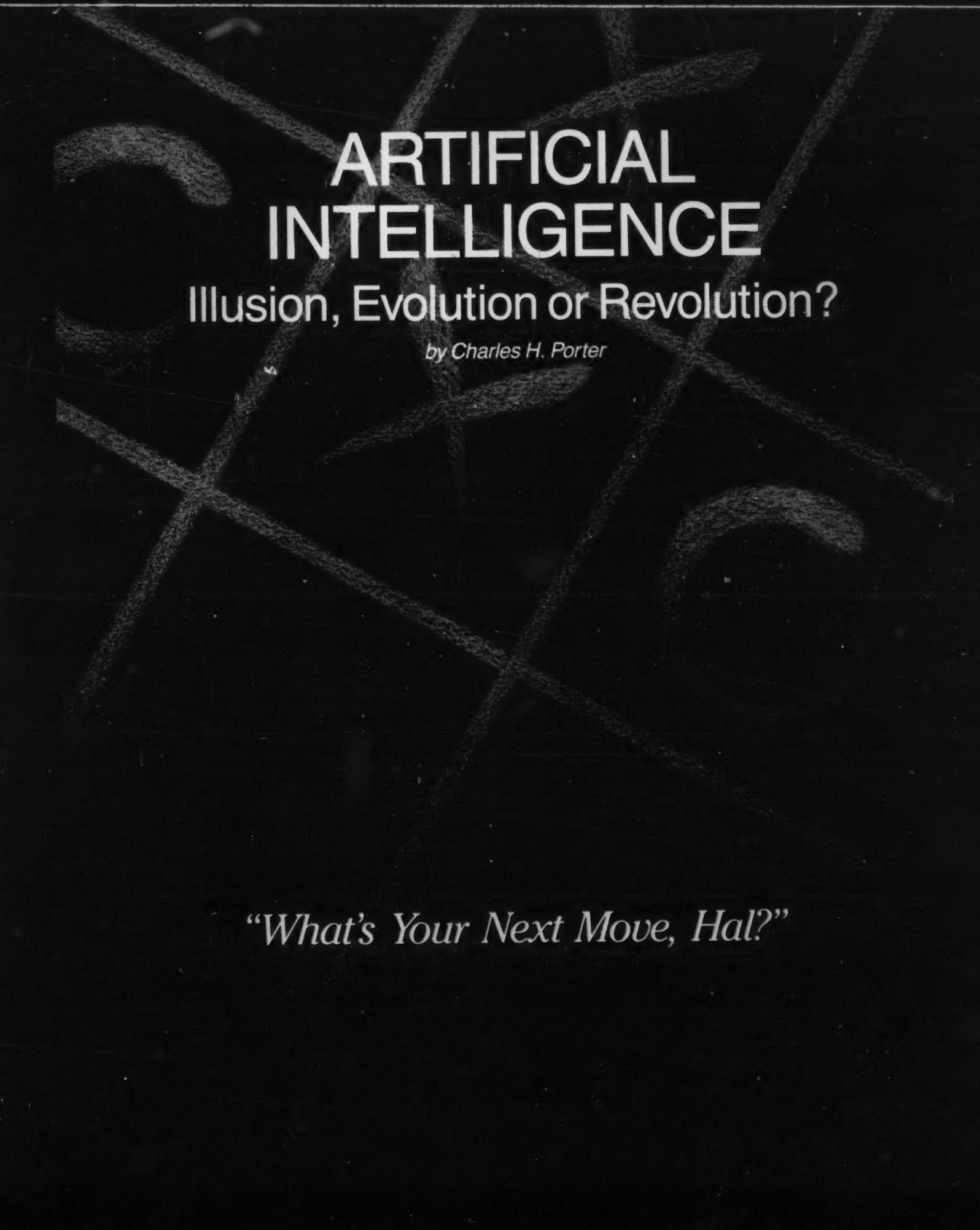
Joyce De Monnin is a Corvallis, Oregon, freelance writer.

How Do The Numbers Compare?

Portland Corporations with 500 or More Employees

Corporation	Number of Employees	Male Executives	Female Executives	Male Directors	Female Directors
Amfac Foods	6,400	5	1	N/A	N/A
Blue Cross–Blue Shield	1,150	11	1	23	2
Burns Bros.	700	10	0	8	0
Collins Pine	575	11	0	5	3
Copeland Lumber	600	5	2	1	2
Dillingham Ship Repair	600	5	1	N/A	N/A
Esco	1,550	16	0	N/A	N/A
Fabric Wholesalers	1,400	7	1	3	0
First Interstate Bank of Oregon	685	3	1	11	1
Floating Point Systems, Inc.	1,450	11	0	7	0
Fred Meyer, Inc.	15,500	15	1	5	0
Gillmore Steel	526	4	0	4	0
GranTree Corp.	1,200	6	0	6	1
Hanna Car Wash	400-600	11	0	N/A	N/A
Hoffman Corp.	850	5	0	3	0
Hyster	5,200	18	0	7	0
Jantzen	4,000	11	1	7	0
Lamb Weston	3,000	20	2	4	1
Louisiana Pacific	14,400	7	0	8	0
Nerco	1,900	8	1	7	0
Northwest Natural Gas Co.	1,239	17	0	10	1
Omark Industries	3,819	13	0	N/A	N/A
Oregon Bank	863	4	0	9	0
Oregonian Publishing	1,050	7	0	N/A	N/A
PacifiCorp	3,800	6	1	13	1
Pope & Talbot, Inc.	1,500	9	0	7	0
Portland General Electric	3,134	15	1	14	1
Precision Castparts Corp.	2,849	10	0	9	0
Sprouse Reitz	2,900	6	0	4	0
Standard Insurance	752	7	0	15	0
Tri Met Transportation	1,742	15	1	2	3
United Grocers	1,000	9	0	N/A	N/A
Washington Iron Works	800	3	0	N/A	N/A
White Stag Manufacturing	1,882	6	1	4	1
Willamette Industries, Inc.	8,400	6	0	5	0

SOURCE: *Standard & Poor's Register of Corporations, Directors and Executives, 1987.* Assumptions were made about the number of males and females based on traditional names.



ARTIFICIAL INTELLIGENCE

Illusion, Evolution or Revolution?

by Charles H. Porter

"What's Your Next Move, Hal?"

High technology, properly implemented, is indistinguishable from magic. One of the newest emerging technologies to prove itself outside the lab is artificial intelligence. Is it magic, illusion, evolution, or revolution?

The serious exploration of artificial intelligence (AI) has been going on in academic circles for close to 40 years. Alan Turing, in his 1950 paper, "Computer Machinery and Intelligence," suggested that computers could be programmed to exhibit human behavior. If we test the success of AI against the popular notion of computerized human behavior, the technology is clearly an illusion. We have not yet created, for example, a computer as "human" as the HAL9000 in Arthur C. Clarke's *2001: A Space Odyssey*.

In the 1960s and early 1970s, the field of artificial intelligence was divided and computer science began the conquest of its parts. Very rapid progress has been made in problem solving and robotics. The areas of knowledge acquisition (learning), natural language, vision, and speech have made low to moderate progress.

Concurrent with the exploration of AI, there has been an evolution of information processing technologies. This evolution has produced increasingly powerful computer languages and system software that consists of reusable components, which have been removed from application systems.

Finally, just as data has been removed from applications and managed separately as a corporate asset, knowledge is now being removed and maintained in repositories, known as knowledge bases, within expert systems. Viewed in this context, artificial intelligence is evolutionary.

Objectives and Advantages

The primary goal of any organization considering AI should be to use the technology to move quickly to high-value applications, an area where the relevance of the problems and the benefits of AI are apparent. Too often, organizations proceed "technology first," purchasing AI products, then expecting them to solve any number of poorly defined problems. Many of these organizations simply abandon the technology when their early efforts meet with resistance. Although some technically oriented tinkering with AI technology may be appropriate to build user confidence and determine the state of the marketplace, AI should primarily be used to address high-payback problems. A local insurance company, for instance, is implementing an AI-based system that will save $5 million a year by curbing overpayment of benefits and will require a system development effort of only $250,000.

Institutional staying power is needed to weather the start-up costs and technology transfer challenges of artificial intelligence. Successful AI application requires a well-conceived but limited problem area. A major software vendor, for example, is exploring the feasibility of using expert systems to install its software on customer computers, because conventional data processing approaches have failed to deliver the targeted 70 percent personnel reduction. AI must be capable of solving a particular problem in a better way (faster, more user friendly, more adaptively) than traditional data processing.

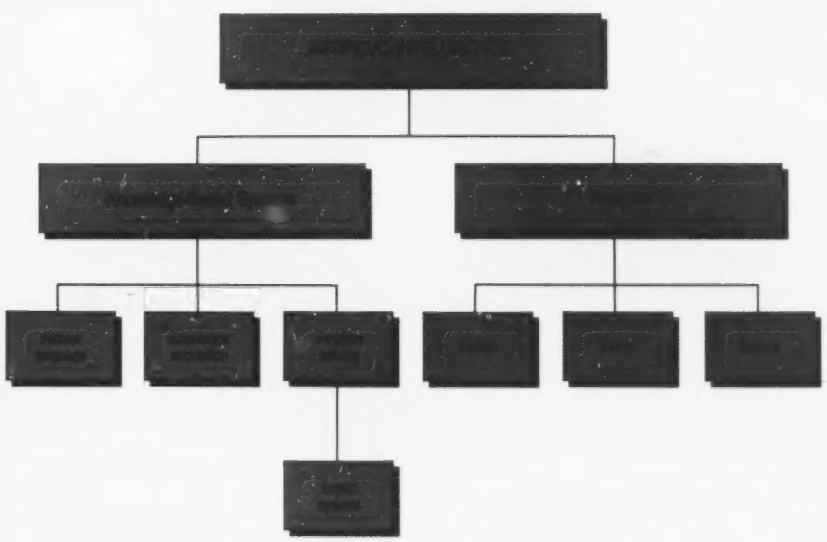
A prime strategy for information-intensive businesses is to focus on the activities of experienced knowledge workers, personnel who are expected to make informed decisions based on some type of input or message. One large firm is using expert systems to analyze the risks associated with large construction projects and to develop risk management strategies and tasks. The processes used to make these decisions—message classification, policy analysis, case tracking, risk assessment, and exception processing, for example—frequently are referred to as "front-office" functions. Conventional programming has not provided substantial assistance for the knowledge-intensive work that occurs in front offices. The widespread use of AI technology promises to make automated front-office support a cost-effective proposition for the first time.

Most front-office processes were not automated in the past because of basic concerns:

- Automating the relatively simple back-office functions had not been easy, and automating the more complex front-office functions of knowledge workers might have been beyond the skills of programmers and system designers.
- The long lead times involved in building complex systems made the undertaking too risky. Business requirements changed repeatedly while the systems were being built.
- Given the high cost of developing complex systems, it was not possible to make an argument for such an undertaking. Even if the systems could have been built, they might have been impossible to maintain because of their complexity and the volatility of front-office operations.

AI's simplification, maintainability, and reusability address these concerns head-on. The technology simplifies both the system-building process and the systems themselves, making it possible for programmers and system designers to attack more complex applications. In a recent project to implement a driver licensing system, an ex-

Using Machines to Imitate Human Behavior

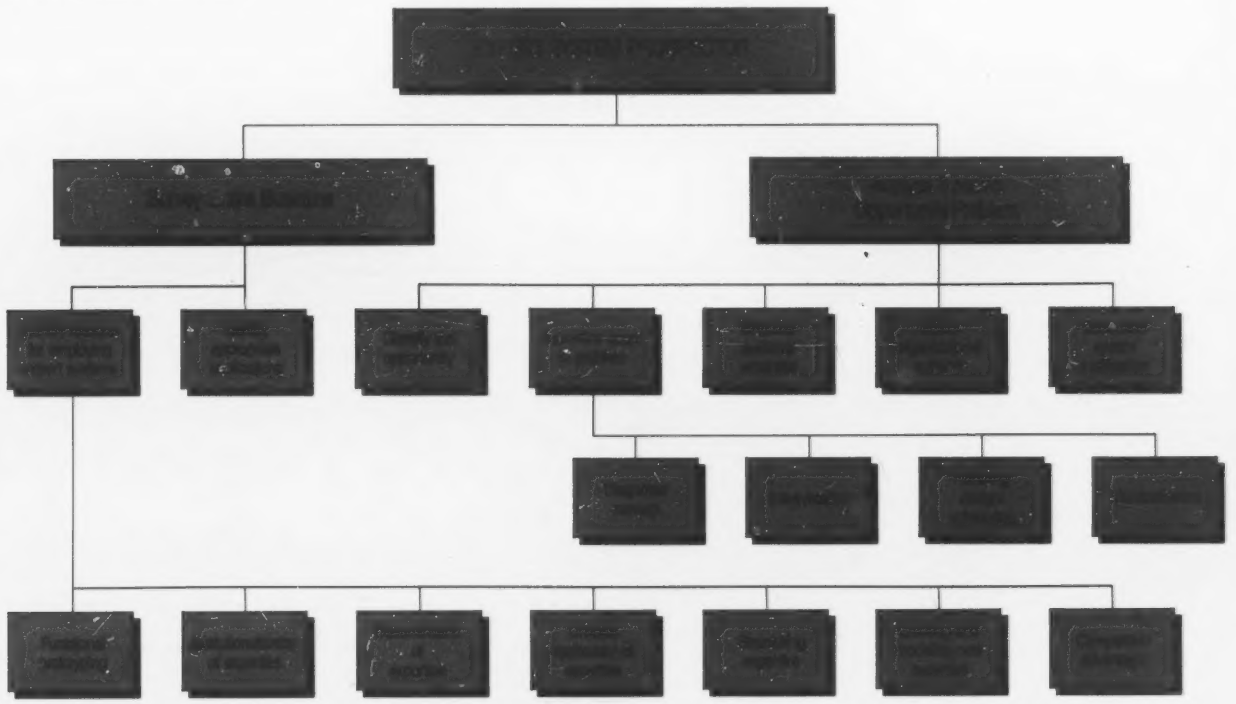


GARY JACOBSEN

© *1987 Arthur Anderson & Co., Charles H. Porter*

Is Artificial Intelligence Suitable For Your Company? For Your Problem?

The Expert System Prospector is a microcomputer-based expert system that analyzes the feasibility of an AI approach to a particular problem (right branch) and identifies whether AI is likely to have an impact on the company in general (left branch). Each box represents a line of reasoning implemented in rules that incorporate knowledge about expert systems opportunity assessment.



pert systems approach was used to design and code modules that assign points against a driver's license for traffic violations. This approach simplified development, reduced the required effort by two-thirds, and left behind a powerful maintenance environment within which users could change the rules without data processing support.

System development risks are reduced by AI's rapid prototyping, incremental system development, and ability to respond quickly when requirements change. Since AI-based program functions can be reused more readily across applications than traditional program structures, the effort required to develop systems declines as the library of reusable functions is built. The incremental cost of developing systems may actually fall as functional capabilities grow. Once these modular systems are in place, the characteristics that made them easy to build will make them easy to maintain or change. Although new maintenance and testing methodologies must be developed to support them, AI techniques will extend the scope of computer applications.

The First Successes

Stand-alone expert systems account for most of the early commercial successes of AI applications. Hundreds of these small, self-contained systems are currently in use, and each addresses a specific area of knowledge typically considered "expertise." Hundreds more systems are under development, and prototypes using the technology easily number in the thousands.

Stand-alone expert systems are successful for a number of reasons:

- **Small Size.** Most successful systems address limited knowledge domains that are captured easily with a few hundred well-structured rules.
- **Quick Benefits.** Expert systems are produced incrementally; working, demonstrable logic is typically available within a few days. A complete application is usually ready within a few months.
- **Easy to Understand.** The if-then logic in expert systems rule bases is similar in form to conventional conditional statements. Once users grasp the rule-based processing concept, they usually can begin testing the application.
- **Comprehensive Shells.** The number of quality software packages to support expert systems development increases monthly. Each successive generation of products is easier to use, higher in quality, and provides more capabilities than the previous group.
- **Conventional Foundations.** Users seem more comfortable with AI applications written for conventional environments, and most existing expert systems applications are built on microcomputers such as IBM's AT personal computer. The applications are written in conventional languages such as C and Pascal, running under DOS or UNIX.

Today's businesses perform numerous activities with characteristics that expert systems can address effectively. These activities include analysis that is forms and paper intensive, involving many levels of authority and approval. In these activities, knowledge and judgment are applied to a

narrow problem area, such as the use of complex regulations, guidelines, and departmental codes for reference and validation, and to administrative tasks that depend on consistent, accurate handling by clerks in environments where personnel turnover is routine.

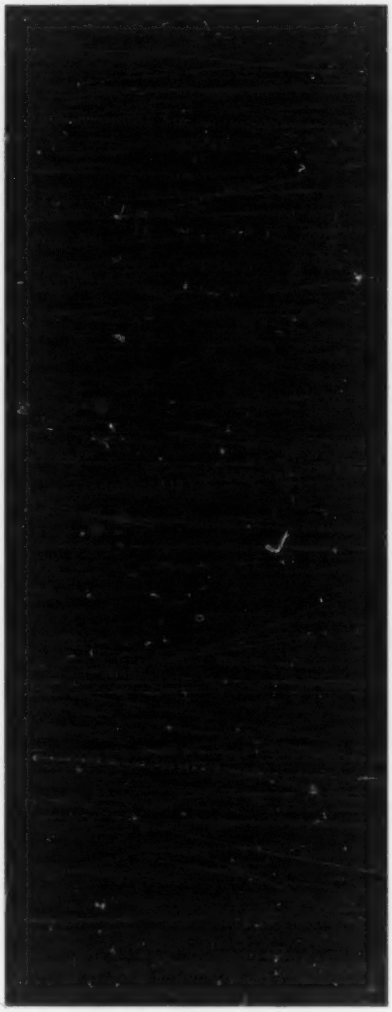
Expert systems capabilities can be used to create a prototype of these functions in large system development projects. Some sample applications under development include processing travel expense claims, classifying and validating drivers' licenses, applying tariff codes to imported goods, and analyzing mortgage applications for Fannie Mae, VA, and FHA guidelines.

The Next Successes

Many of the business problems that show great promise for AI techniques are beyond the capabilities of small, stand-alone expert systems. Experienced users are looking beyond the early systems to the more complex AI applications and techniques required to satisfy the more difficult functional requirements. AI may have to be integrated with other emerging technologies to produce a single systems solution.

One of the best-known commercial AI applications that demonstrates advanced techniques is the Financial Statement Analyzer (FSA), which Arthur Andersen & Co. developed for the U.S. Securities and Exchange Commission (SEC) in connection with its EDGAR pilot (EDGAR is a system that electronically receives SEC filings directly from submitting companies). FSA is a prototype that analyzes the financial information contained in the wealth of electronic documentation in EDGAR's filings. Financial analysts spend a significant portion of their time manually retrieving information needed to perform analytical reviews of SEC filings. Much of this information is embedded in financial statements, parenthetical remarks, footnotes, and management discussion and analysis. The manual process of retrieving this information is extremely time consuming. Consequently, analyst productivity is reduced because less time is available for substantive analysis.

The real challenge for FSA is not performing the analyses, but extracting the relevant information for the analysis process. Financial statements, which require certain types of information, are not uniformly structured. Individual filers adapt the format, wording, and organization of their statements to fit their unique needs. Often information critical to a meaningful analysis is embedded in the text of a report.



The purpose of FSA is to perform consistent financial analysis, despite differences in individual statements. This analysis focuses on the calculation of standard financial ratios, such as the Quick Ratio. FSA reads the relevant financial tables and footnotes of companies in EDGAR's data bases and then presents the results of the ratio calculation.

FSA can interpret a variety of statements. It can recognize line-item captions listed several ways and understands the context of the caption within a section of the statement. FSA would recognize, then, a caption such as "Other" to mean "Other Current Assets" or "Other Receivables." FSA also follows alternative strategies if it is unable to find a particular line-item caption. For example, if it cannot find a high-level item such as Accrued Liabilities, it looks for the sum of its components: Accrued Salaries, Accrued Taxes, Accrued Interest. In addition, if it cannot find all the components of a ratio, it tries an alternative mathematical formula. Quick Assets, for instance, a component of the Quick Ratio, is a subset of Current Assets. It can be computed by including the relevant items from Current Assets or by subtracting the irrelevant items from Total Current Assets.

FSA was developed using several AI techniques. Object-oriented programming was used to represent captions and ratios. Caption and ratio objects contain explicit knowledge about how and where a caption might be found and how a ratio is calculated. Natural language processing techniques were used to locate and extract information from textual footnotes.

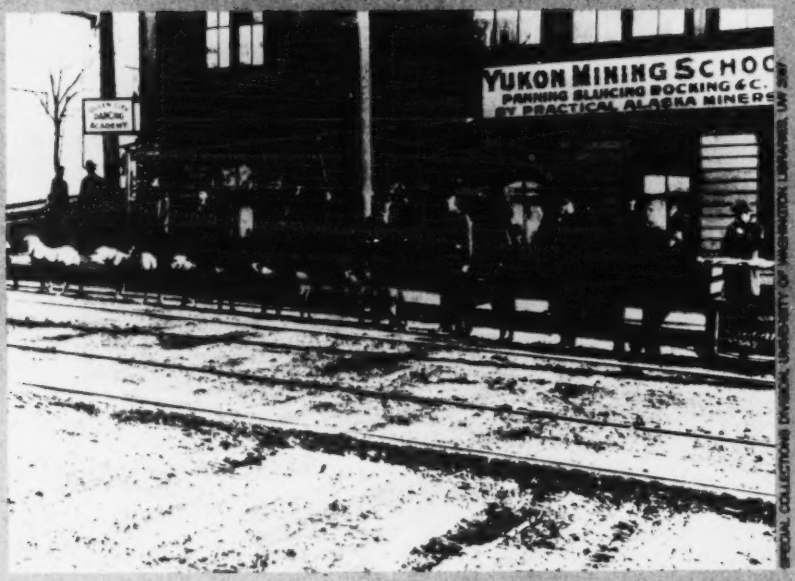
The use of these techniques gives FSA a modular architecture that makes the addition of new captions and ratios quick and easy. The architecture of FSA is supported by IntelliCorp's KEE software running on a Symbolics 3600 Lisp Machine.

The Promise of AI

For commercial and government users, artificial intelligence technology is not an illusion of magic that emulates human intelligence; it is an inevitable evolution from traditional computing. The tools and techniques developed in AI research labs use the basic components of data processing in innovative new ways that more fully employ and extend the capabilities of powerful, more versatile computer architectures. The technology is being put to effective use in today's organizations, and new developments are generating wider use in the mainstream of data processing.

The promise and the growing reality of artificial intelligence is that it can successfully automate what conventional data processing has failed to deliver. AI can deliver solutions to incredibly complex problems. It can sort out good-enough alternatives from alternatives too numerous to analyze with conventional means. And, yes, in controlled domains, it can deliver expert decision-making and analysis indistinguishable from expert human judgment. Here's the magic and, in it, the seeds of revolution.

Charles H. Porter is a partner in Arthur Andersen & Co. and directs its Pacific Northwest artificial intelligence practice. He is a member of the worldwide AI steering committee.



The Yukon Mining School's team heads toward the dance academy.

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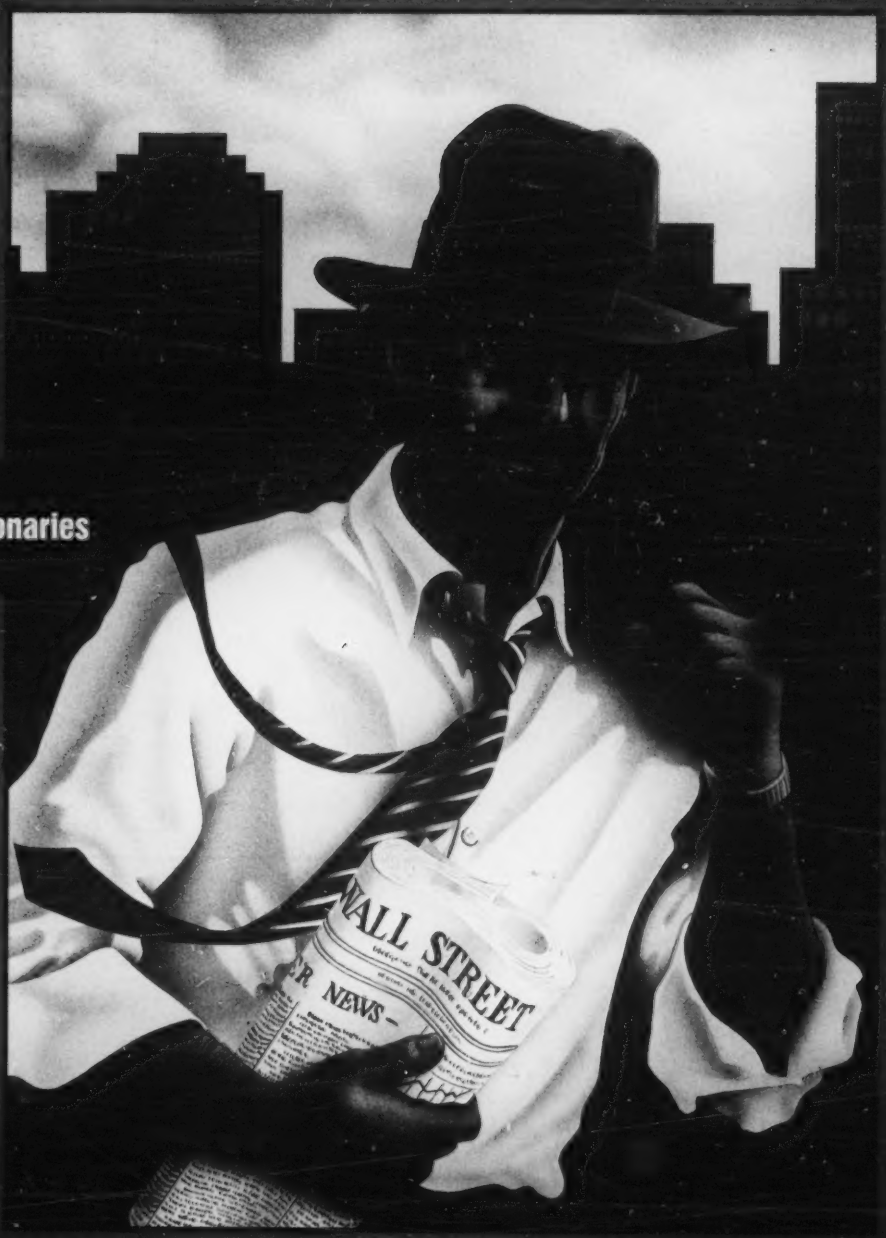

Entrepreneurs: The Capitalists and Visionaries of Small Business

REGIONWATCH

- **What Do Economic Developers Do?**
- **Annual Economic Indicators**
- **Foreign Investment: A Source for Concern?**

Balanced Growth: The USSR's Asia-Pacific

Esso Japan's President Talks About Corporate Strategies

Commentary

Creating Job Opportunities

Economic development means different things to different people. Some see a tight relationship between economic development and the state welfare system, education, and a healthy tax base. Others view development narrowly, as a way to promote growth in a local community. For this article, I'm using economic development to define the process by which we make job opportunities available for residents of the state.

The agencies that serve low-income families and individuals list the lack of job opportunity as their clients' number one problem. Students throughout our school system say that the desire for a good job is what keeps them working for a good education. Local governments point to weaknesses in the economy to emphasize the lack of available tax dollars.

The process of new job creation is an ongoing one and has received a significant boost in recent years through Team Washington's new program initiatives. With this effort, added funds have provided technical support programs to assist businesses in problem solving. For the first time in our history, we have a statewide system of local economic development efforts. This local system is tied into a coordinated state program, where key agencies are working to identify and support business expansion needs. In the last four or five years, we've been working to improve the cooperation among state agencies and between state and local organizations.

The State Economic Development Board is another new initiative set up to establish an economic development plan for Washington and prepare a list of recommended actions. In addition to listing tax reform, educational excellence, and the "two Washingtons" as topics of concern, their report is expected to recognize the lack of financing sources and its impact on small business.

While technical assistance programs have improved in scope and capacity, financial assistance is actually weakening. Although a number of remedies have been suggested to replace disappearing sources of assistance, we have not yet come to grips with meeting the finance needs of small businesses.

Another obvious problem is that of professional training. The number of people working in the field of economic development has greatly expanded, but the competence level of those people varies. We probably don't need more people; we need better trained people—and for that, we need formal training programs.

In addition, we continue to be caught up in the old-style problem of being quite good at creating programs, but poor at eliminating ones that aren't working. We need to do a better job of setting goals, measuring achievement, and changing or eliminating programs that don't perform.

In recognition of the direct link between lack of job opportunity and social problems, we are devising new initiatives, such as the Family Independence Program (FIP). This is a major effort to convert a welfare system to a jobs system—and is clearly a pioneering experiment. The success of FIP, however, will depend on the existence of job opportunities and on the amount of income these jobs can generate for workers. This is the type of challenge that can, if successful, provide tremendous benefits both for the individual and for society. Again, success depends on job opportunity.

We have made a number of important improvements in our system of economic development services. We know more now. We understand how to influence investment and new job decisions. We can see how a healthy economy affects social problems, as well as government's ability to meet society's needs. As our understanding of economic development increases, we hope that it will be seen as an increasingly important tool to shape a positive economic future and a healthy lifestyle for us all.

William Lotto
President
Thurston County Economic Development Council
Economic Development Executives of Washington

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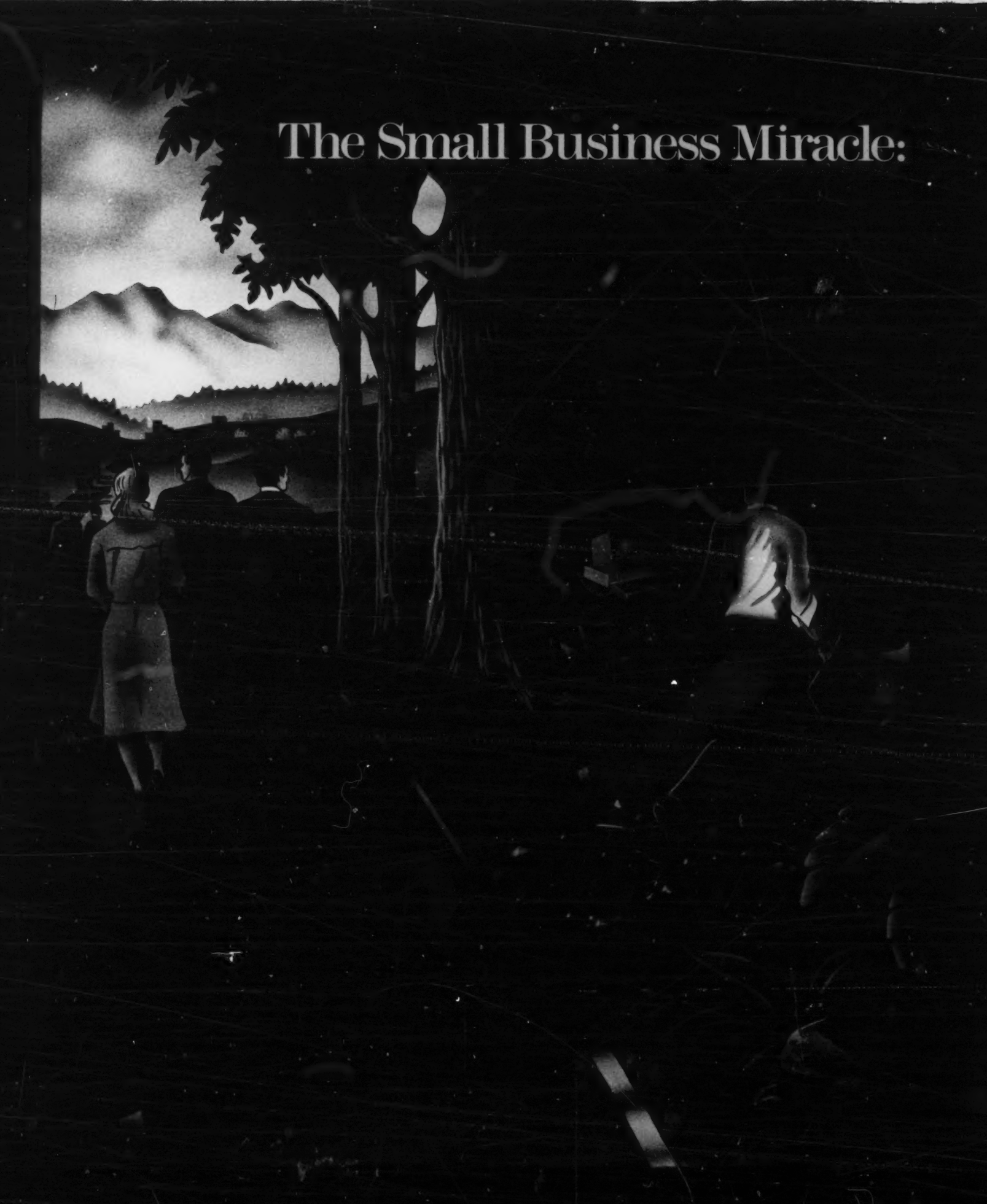

The Small Business Miracle:

Profile of an Entrepreneur

by Fred Moody

Man, to misquote Mark Twain, is the only animal that dreams —or needs to. The human animal is driven by dissatisfaction with his material and spiritual lot the way simpler beasts are driven by the quest for survival and the urge to reproduce. Complacency, for the human, is a psychological form of the same death that awaits the shark tired of moving constantly forward. In many ways, the story of civilization is the story of the human race's sharklike forward motion through time.

Every culture has its own literature of vision, an artistic expression of the human drive to dream. Sixteenth-century England had Shakespeare's tragically ambitious kings, 19th-century Russia had Dostoevsky's criminally ambitious pseudophilosophers, and 19th- and 20th-century America has the heroically ambitious self-made man. What Lear and Raskolnikov were to their cultures, Horatio Alger is to ours.

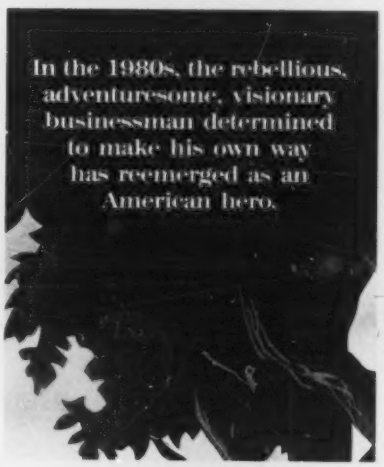
The American heroic business figure, over time, has undergone endless permutations. The up-by-his-bootstraps immigrant, the westward-bound adventurer and prospector, the inventor, the tycoon, the entrepreneur, the organization man, the CEO, and the corporate raider have each had his day. Each manifestation of the hero is an embodiment of his age's aspirations and ideals.

In this regard, the 1980s have seen a renaissance of the entrepreneurial archetype. As the traditional American corporation has taken more of a beating in the world marketplace and as America has shifted from a goods-producing nation to a service-providing one, the rebellious, adventuresome, visionary businessman determined to make his own way has reemerged as an American hero. Just as the 19th-century adventurer's land of opportunity was the wide-open West, so is the entrepreneur's gold mine the confused, chaotic jungle of the modern American business world's identity crisis.

The New Entrepreneurism

Nothing more dramatically highlights the rebirth of the entrepreneur than a 1987 survey by the Harvard Business School of its 1977 MBA graduating class. Despite Harvard's reputation for producing staid corporate executives, 20 percent of the survey's respondents described themselves as self-employed; 54 percent as entrepreneurs.

Government studies also show that the modern business community is being increasingly occupied by the small businessman. "Using business starts per 10,000 employees as a relative measure of the start-up activity within an industry," intones the *1986 State of Small Business Report of the President*, "small-business-dominated industries have a start-up frequency more than seven times that of large-business-dominated industries. The most frequent starts in 1986 occurred in industries close to final sales to the consumer, such as real estate and insurance, retail stores, and personal services." Among other things, the rise of small business is a testament to the search for innovation in the modern business world. "Small businesses in these industries," the report continues, "are among the first to experiment with new products, new locations, new methods of service, and new technologies."


In the 1980s, the rebellious, adventuresome, visionary businessman determined to make his own way has reemerged as an American hero.

Nancy Bross, a Performex Management Systems consultant who helps northwest businesses meld entrepreneurial and traditional, corporate modes of thinking and producing, ascribes the new entrepreneurism to general cultural upheaval. "It's the American competitive spirit coming out," she says. "We're unique in this country. We're highly competitive. As people who work, we're very demanding. We have very high expectations, and we've undergone a tremendous change in values. Through the 1950s, everything was team-oriented. It took lots of team effort for World War II, rebuilding the country after the Depression, and so on. And we had mostly manufacturing businesses, not nearly as much service and information business."

Along with the change in the nature of American big business has come a change in the character of the American worker. "Today's young professional is more of an individualist," Bross observes. "The loyalty to company, the loyalty to the system, is gone. People have skills and abilities that they take from place to place and market. Companies hire these people with no expectation that they're going to keep them forever."

Washington, according to the *LMI Review*, is extraordinarily dependent on small business. Between 1976 and 1982, the *Review* reports, Washington employment grew 21 percent, while the nation's grew 16 percent. Nationwide, small business accounted for 51 percent of the growth in employment; in Washington, it accounted for 61 percent. The bulk of Washington's growth is attributable to western Washington's business history and its quality of life. High-tech manufacturing and biotechnology are among the hottest industries in the current national marketplace, and the Seattle area offers the amenities of a large city and the environmental quality of the northwest, both of which are attractive to the modern, highly educated worker. In addition, these industries find a skillful pool of workers already in place, because of the area's manufacturing history in aerospace technology and marine electronics, and the presence of research institutions like the University of Washington—all of which encourage spin-off businesses to get off the ground. "The simple availability of brain power is a tremendous influence," says Geoffrey Abdian of Intermec, a manufacturer of bar-code printers and readers. "Many of our people came from Boeing and IBM." Aldus co-founder Jeremy Jaech says, "It was easy

for us to recruit software engineers. There are more than one hundred software engineering companies in the area."

The "Bootstrap Method"

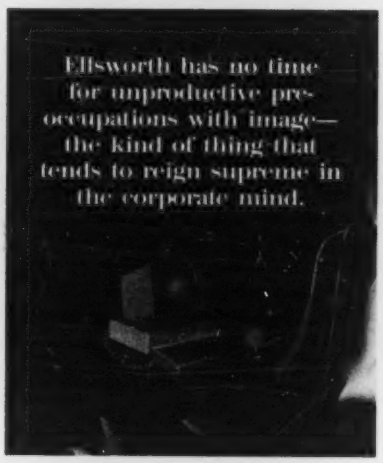
Local entrepreneurs give the impression that their success stems from an alchemical combination of vision, drive, temperament, superhuman energy, and luck, with a considerable dose of environmental quality thrown in for good measure. "This is," entrepreneurs inevitably conclude when analyzing their success, "a nice place to live."

The E-Comms story is a case in point. The brain child of Robert Ellsworth, an old-fashioned rugged individualist with modern-day high-tech skills, E-Comms is a six-person electronics firm well on its way to doing $5 million a year in business. A manufacturer of sophisticated equipment that facilitates communication from computer to computer and between computer-input units and video monitors, E-Comms, after only 10 months of existence, has moved to new headquarters with a 12,000-square-foot building and five acres of land, and already has more orders than it can fill. "We're backlogged over 400 units," Ellsworth says.

Ellsworth is a blunt-speaking, no-nonsense man who, in his own words, "has lived all over the world" and prefers this area. He also prefers making his own way and espouses what he calls "the bootstrap method" of business. "We could go out and get venture capital," he says of E-Comms, "but you lose control. It's better to stay thin and tough and do it by the bootstrap method." His attitude developed as the result of both personal inclination and prior experience. Seven years ago, he and two partners founded Datacom Northwest, an electronics firm now known as D-Comm Technologies. His two partners furnished $35,000 in start-up money, Ellsworth furnished the expertise, and D-Comm, in seven years, grew into a 70-employee firm grossing $5 million a year. Success notwithstanding, however, Ellsworth was unhappy and frustrated. "I was always in a minority position there," he says, "and didn't have much to do with long-range planning. I was restricted by the investors and couldn't get things I needed fast enough." Most pressing was the need to buy in-house typesetting equipment. "We had to publish 100 manuals a year," Ellsworth recalls heatedly. "But I could never get my buddies to cough up for it."

Although he retains his ownership share of D-Comm, Ellsworth relinquished control of it to start over. With his savings and the partnership of two other people who "were tired of making money for someone else," he formed an ideal team: "an engineering guy, a parts guy, and a financial guy." They set up a business that was "pretty well self-sufficient. We have our own production facility, our own publication system, and so on."

Typical of a small electronics firm, E-Comms manufactures specialized equipment, the need for which is created by the constantly changing nature of the computer business. The company's SCVA video amplifier and LVDA video distribution amplifier


Ellsworth has no time for unproductive preoccupations with image—the kind of thing that tends to reign supreme in the corporate mind.

are small boxes that allow a single keyboardist to input images onto several video display terminals scattered throughout a building. Another E-Comms product "compresses" data being fed through modems from one computer to another, allowing them to quadruple their speed of communication. This kind of specialized company, founded by an expert with an eye to where the marketplace is headed and the drive to turn his vision quickly into a profitable reality, relies heavily on a rapidly changing industry for its existence.

Ellsworth's business decisions are savvy, his descriptions of his products are mind-boggling and arcane, and yet his manner is extremely down-to-earth. With him, all that matters is achievement and substance. He has no time for unproductive preoccupations with image—the kind of thing that tends to reign supreme in the corporate mind. After three months in Redmond, he says, he moved to considerably less glamorous Gig Harbor, lured by a more cooperative county government, cheaper land, and an abundant, trained labor force coming out of area community colleges. It was as much an aesthetic decision as a hard-headed business decision. "We don't need that kind of plastic bullshit that goes on in Bellevue," he says. He is similarly blunt when talking about investors. "We financed ourselves," he says in what proves to be a recurring refrain, "so we wouldn't have to be listening to some investor. It's one thing to have an investor in your company who knows something about the business, but most of these guys are worthless."

Pouncing on the Opportunities

Ellsworth, with his small, new firm, has much in common with the founders of the northwest's latest big software success company: Aldus, the manufacturers of PageMaker. Founded in January 1984 by five people with just over $100,000 in capital, the company now employs 300 and was valued at $350 million when it first went public in mid-1987. In both cases, the company founders saw an opportunity gleaming through a narrow niche in the computer marketplace and, like true entrepreneurs, pounced on it.

In Aldus founder Paul Brainerd's case, opportunity knocked in the form of a specialized technology adapted to the huge personal computer market. Brainerd's vision came to him when he was working for Atex, a manufacturer of input and formatting systems for newspapers. Before Atex, news stories had to be written by one person, edited by another, formatted by a third person, and typeset by yet another. Atex produced a computer system that allowed a reporter to file a story at one terminal and an editor to call it up on another, edit and format it, then send it directly to a printer, which would produce camera-ready copy, complete with typeface changes, headlines, and graphic elements. Brainerd was convinced that a program could be written that would allow personal computer owners similar graphic power.

With money saved from the sale of his Atex stock, Brainerd recruited four software engineers, and the five of them rented a small apartment in the Pike Place Market and set to work. "There were four of us working on the product," says Aldus cofounder Jeremy Jaech, "and Paul over in the corner on the phone, trying to raise money."

As with many entrepreneurial attempts, fund-raising was more an art than a science. Banks, with an eye on the bottom line, are loath to underwrite dreams, and the group lacked enough money on its own to last more than a few months. So it turned to venture capitalists. "We found it fairly dif-

ficult to get funding," Jaech recalls, "because 1983 was a terrible year for the technology stocks. And venture capitalists are just financial guys—financial animals. They're really into pro formas, profit and loss. They were really clear about what they wanted. First and foremost was management. They would never consider funding a company if they didn't have confidence in management—which was Paul. Second was money. They really have very high expectations. They want to make 10, 20 times their money in five, six, seven years. They didn't spend very much time looking at what we were building."

The enterprise, Jaech continues, while visionary, was also carefully structured. "From the very beginning, we were trying to build a company. We set financial goals for ourselves when we first got together. We were determined to run it in a businesslike fashion, even though at first we were just a bunch of guys sitting around talking about how to do things."

The group's initial goals, in retrospect, were absurdly low. "We figured we could be a $30 million company," says Jaech, "and, if we were really lucky, we could hit $60 million in five years." For six months, they operated off their pooled capital and their spouses' salaries, and for one month, they "ran on empty. Then we got $850,000 from a venture capital group in September of 1984. We released our first product in mid-July 1985, in August we were in the black, and we've been there ever since." Had they not gotten venture funding that month, Jaech says, they would have disbanded—a circumstance suggesting that luck is as vital to entrepreneurship as are drive and genius.

Luck, as it happens, played a gigantic role in the Aldus success story. Apple Computers, at the same time Aldus was working on PageMaker, was developing the MacIntosh computer and the LaserWriter printer. "We saw the MacIntosh coming," says Jaech, "but we didn't see the LaserWriter." The LaserWriter was a problem for Apple: while it used state-of-the-art printing technology and was capable of performing hitherto-unimaginable graphic design calisthenics, it cost twice as much as Hewlett-Packard's LaserJet and had no software capable of driving it to the limits of its technological potential. When Apple discovered Aldus and PageMaker, however, one of the most lucrative symbiotic relationships in business history was born. Suddenly the LaserWriter was marketable, and Aldus had a hardware tie-in it had never dreamed of. "Last year," says Jaech, "Apple sold $150 million in hardware to support PageMaker." Had the two products not come into being at the same time, neither company would have done as well as it has, and the desktop publishing industry would still be a science-fiction fantasy.

Brainerd, as Jaech describes him, is "the entrepreneurial driving force behind Aldus—you have to be a total workaholic to do something like that." Jaech insists that he himself lacks that kind of drive, but he has much of the classic entrepreneur in him. He is, by his own admission, easily bored and finds too little challenge in garden-variety computer work to keep him interested in holding a job for long. "I've always jumped around from job to job," he says—he worked, among other places, at Boeing before joining Aldus— "and Paul provided that vision for me that I'd never had anywhere else. There were so many things going on at Aldus that I never got bored."

"There's no greater hook than success," says Jaech. "When things are going well for you, you feel like you can't walk away from it."

As Howard H. Stevenson and David E. Gumpert point out in "The Heart of Entrepreneurship," in the *Harvard Business Review*, entrepreneurs are driven out of traditional corporations by the corporation's commitment to the status-quo—a commitment that discourages "innovation and the pursuit of opportunity. . . . Like most other people, [corporate executives] tend to take comfort in routine and predictable situations. This is not because they are lazy; they are just more inclined to the administrative end of the organizational spectrum than to the entrepreneurial end." For Jaech and his cofounders, corporate work was frustrating in the way it discouraged creative thinking.

It is interesting to note that of the five founders, only one—Brainerd, the nontechnical member of the group—moved up in management when Aldus grew to a 300-employee company. Of the others, one is on leave and three (including Jaech) are doing what they did during their heady salad days—working on new products. "A hierarchy is getting imposed here now," Jaech says resignedly. "So there've been some tough cultural changes. We're bringing in professional managers now, and they bring a different culture with them." By staying in the technical department and working on new products, he and his fellow quasi-dropouts are trying to have it both ways: enjoying the fruits of their corporate success while preserving something of the creative, adventurous days of their early entrepreneurship.

The corporate culture, it is clear, has not found its way into Jaech's spacious office. While ID badges, spiffy dress, and incredible hustle hold sway in the corridors and rooms leading to his corner of the company, Jaech, in khaki slacks and a heavy pullover, sits quietly at his table, looking more like a graduate student than the co-progenitor of a multi-million-dollar corporation. "There's no greater hook than success," he says. "When things are going well for you, you feel like you can't walk away from it. It's like winning at the blackjack table."

The Adventure and the Profit

Robert T. Abbott, the founder, president, and CEO of NeoRx, a biotechnology firm devoted to developing monoclonal antibodies for the detection and treatment of cancer, echoes Jaech. Asked about entrepreneurship, Abbott answers with an immediate, cheerful retort: "It's addictive!"

If anyone fits the classic psychological profile of the modern entrepreneur, it is Abbott. NeoRx is so prototypically entrepreneurial—in both the psychological and the modern business sense—that it is a virtual cliche. Formed in 1984, the company had its beginnings in Abbott's frenetic energy, iconoclastic mind, and frustration with the cautious and orthodox approach to research taken by established biotechnology companies. With a Ph.D. in chemistry and an MBA, Abbott had gone to work first for Dow Chemical, then for Oncogen—the company that brought him to Seattle. Like all entrepreneurs, he noticed a fundamental flaw in the orthodox business approaches taken by established companies in his field, and in that flaw he saw a tremendous opportunity.

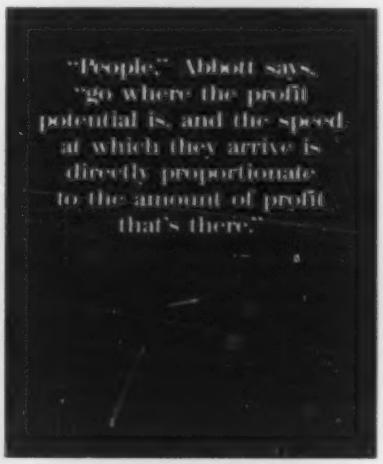
"Managing scientists," he says, "is extremely difficult. Scientists are basically adult children. In order to foster an environment that allows scientists to ask the wide-ranging

questions that lead to brilliant discoveries, you have to manage differently." Established companies tended to give scientists too free a rein. In the academic environment, every answer found by a scientist raises at least two more questions, and he or she sets off in search of answers. When you use that approach in business, Abbott says, "Projects can propagate like rabbits," and companies soon become unfocused and overdiversified. "Eighteen or 19 out of 20 businesses started in the United States fail," says Abbott. "And the main reason is undercapitalization. Diversification, in effect, is the same thing as starting a lot of little new businesses. All of a sudden, by diversifying, you're reducing the capital available to each 'business.' "

This was the reason, Abbott is convinced, for the biotechnology industry's fall from grace in the early 1980s. Begun by visionary scientists and funded by venture capitalists, businesses had gone off on tangents, had missed financial and product-development milestones, were running into financial trouble, and had given the industry as a whole a bad reputation among investors.

Abbott's vision was simple: "People don't realize the amount of resources needed to take an idea all the way through to a product. The way to be really successful is to take the opposite approach, the unconventional route, and be the master in one area, rather than second place in many areas." The area he chose was monoclonal antibody research: the development of antibodies that could seek out and destroy specific cancer cells. Conventional antibody researchers were working on a welter of problems at once—how to synthesize antibodies, how to get them to survive when injected into humans, how to attach isotopes to them, how to get them to attack cancer cells, and so on. Abbott's company would concentrate only on how to synthesize antibodies that could identify and seek out cancer cells. Problems of therapeutic application would be tackled after they had developed and tested antibodies that could "image" —find —cancer. Rather than start out looking for a cancer cure, they would start out looking for an injectable, cancer-focused antibody. "We decided that once we had learned to use a monoclonal as a pharmaceutical, we would go into therapy areas."

Entrepreneurs are by definition energetic, and Abbott is unquestionably one of the most energetic men on earth. Once he had his idea, Abbott, in partnership with Kevin J. Kinsella, set off in search of venture capitalists and scientists. The search for money was not easy. "When you're talking about a pharmaceutical business," he says, "you're talking at least a $50 million to $100 million investment before you see any return. The average venture capitalist looks for a company to turn profitable in one to two years." Abbott spent all of 1984 getting funding. He would take trips around the country to make presentations to financiers and to recruit scientists, then return to Seattle to talk to realtors, suppliers, and insurers. In late 1984, he had scientists around the country ready to hand in resignations at


"People," Abbott says, "go where the profit potential is, and the speed at which they arrive is directly proportionate to the amount of profit that's there."

their institutions, a building waiting to be occupied, and a warehouse full of lab equipment waiting to be delivered—all pending financing.

"We were financed on a Thursday, September 26, at 5 P.M.," Abbott says, "and on Friday morning, 25 people across the country turned in their resignations. On Monday morning, $17,000 in equipment was delivered and, by the following Friday, we got another $50,000 in equipment. Within two weeks, we were synthesizing antibodies. By Thanksgiving, our chemistry group was working at full strength. At the Christmas break, we moved 13 families en masse from Washington, D.C., and, by March 1985, we were doing animal toxicology work. By August, we had applied [to the FDA] to begin human clinical trials." As he tells this story, he seems more taken with the adventure than with the profit potential.

Frenetic energy aside, there are two things about Abbott that, if the literature is to be believed, are characteristic of all entrepreneurs. One is the undying belief in the worth and profitability of your vision. The other is an attitude toward risk that is almost like love. "You can actually look at risk in two ways," says Abbott. "One is the likelihood that the achievement can be reached. The other is what happens if it's not reached. In our instance, we've basically tried to minimize the likelihood of not reaching the achievement by narrowing our focus, but we realize that in picking that strategy, we picked a binary situation: either we succeed like gangbusters, or we go down in flames." He then cites, with considerable zest, a comparison that reveals the romantic adventurer at the psychological center of the entrepreneur. "Statistics tell you that flying is a lot safer than driving. But the conseguences when you fall into the bad side of the statistical column are a lot greater. So basically, we chose the airplane route, whereas most companies choose the automobile route. They run the greater risk of an accident; we risk greater consequences."

As he says this, he smiles the smile of someone trying to get you to walk across a tightrope with him. There is something seductive, to these entrepreneurs, these Indiana Joneses, about flirting with the possibility of going down in flames.

The entrepreneurial urge is as much a creative, adventurous one as it is an urge to make money. The common thread woven through these stories can be found in the story of any successful, self-employed worker. It concerns the deep-seated need to make one's own way, to try out one's own ideas, to change the world in a way that feels meaningful. It is an egocentric urge as old as the knights of yore, as American as the stories of Davy Crockett or John W. Nordstrom. "People," Abbott says, "go where the profit potential is, and the speed at which they arrive is directly proportionate to the amount of profit that's there." On the one hand, it is a scientific way of saying that people are basically greedy. But on the other, it is an accurate analysis of the American society's way of fostering creativity.

It is the entrepreneur, after all, who keeps the American economy abreast of the times. He is a cowboy capitalist, fueling the economy and the future with his drives and obsessions. He is the goad that keeps business from sinking into fatal complacency. And if he thrives so well here in the West, it may be because the West was founded by restless adventurers, looking, like the modern-day entrepreneur, for ways to slake an unquenchable thirst. By tradition, the cultural heritage here inspires and fosters the economic adventurer, the explorer, the dreamer.

Fred Moody is a staff writer for the Seattle Weekly.

REGION WATCH

Economic Developments in the Pacific Northwest

With the memory of the October 1987 stock market crash fading, the dollar remaining at low levels, exports increasing, and national economic indicators showing a continued expansion of the economy, the outlook for the Pacific Northwest remains good. Although there is some movement toward higher interest and inflation rates and there are increasing signs of capacity constraints regionally and nationally, the export-led expansion should continue through the rest of 1988. Exports in the first quarter of 1988 were 29 percent higher than those in the first quarter of 1987.

Year-end employment reports for Pacific Northwest states showed widespread employment gains (see the Annual Economic Indicators on pages 12 and 13). Manufacturing employment was up strongly in all three states, and total nonagricultural employment increased by 3.0 percent in Washington, 3.5 percent in Oregon, and a mere 0.6 percent in Idaho.

In addition, the personal income reports for 1987 showed gains of 4.9 to 5.0 percent in every Pacific Northwest state. This remarkable uniformity of growth rates, when examined in detail, shows that the 1987 growth rate fell, compared with 1985-86 rates, in both Oregon and Washington, and picked up greatly in Idaho. Inflation eroded most of the income growth, however, leaving a real rate of growth of little more than 1 percent. On a per capita basis, real incomes were probably unchanged.

Boeing bonuses

The drop in Washington's rate of personal income growth in 1987, compared with 1986, is to some degree a statistical anomaly. The fourth-quarter 1986 personal income data include Boeing year-end bonus payments, but data on 1987 year-end bonuses were not available to the Bureau of Economic Analysis when it released the fourth-quarter 1987 estimates in April. The series will be revised in August, and Washington's fourth quarter, and its annual estimate, is likely to look stronger.

Family farms

The family farm sector shows continued economic stress. Compared with the same quarters of 1986, farm personal income declined in Washington in the last three quarters of 1987, and farm proprietor's income fell in the fourth quarter. In Oregon and Idaho, farm proprietor's income fell in the fourth quarter of 1987, and in Oregon fourth-quarter farm personal income dropped as well. Nationwide farm wage and salary payments and agricultural cash receipts suggest a much stronger agricultural sector than the farm personal income data show. According to a Bureau of Economic Analysis official, much of the strength in wage and salary payments and cash receipts may be due to the stronger performance of corporate farms nationwide.

Hanford layoffs

The most visible trouble spot in the 1988 regional economy is the Hanford Reservation. Late in December 1987, the U.S. Congress directed the Department of Energy to cease all nuclear waste repository program site-characterization activities at Hanford within 90 days. This action eliminated approximately 1,200 jobs.

In February 1988, the Department of Energy announced that its N-reactor, a plutonium-breeding device that was also used to generate power for the Washington Public Power Supply System, would not be restarted after a shutdown for safety improvements. By the mid-1990s, an additional 6,420 jobs will be affected as facilities dependent on N-reactor outputs are also shut down. A report by Battelle estimates 14,900 direct and indirect job losses by 1996 due to the N-reactor shutdown.

Many of those leaving Hanford are highly paid engineers, scientists, and technicians, and their departure will create a gap in the Tri-Cities economy and in local and state government revenues. A diversification effort aided by $1.9 million in state funds is under way, but a contraction of the Tri-Cities economy is likely in the next year or two.

Forecast panel: The outlook brightens

Our forecast panel, like many other forecasters nationwide, overreacted to the stock market crash last fall. The panel's GNP forecast was revised downward in January 1988, just after the crash, and remained at that low level in April. Our latest survey, however, shows a somewhat stronger expected real GNP growth rate of 2.4 percent for 1988 and 2.0 percent for 1989 (Table 1). These panel projections are only slightly lower than those that were forecast before the crash.

Table 1: Panel Forecasts
median annual percent changes

	REAL GROSS NATIONAL PRODUCT	IMPLICIT PRICE DEFLATOR
1987 actual	2.9	3.0
1988	2.4	3.6
1989	2.0	4.1

	NOMINAL PERSONAL INCOME	NONAGRICULTURAL EMPLOYMENT	MANUFACTURING EMPLOYMENT
Oregon			
1987 actual	4.9	3.9	4.1
1988	5.6	3.3	3.2
1989	5.8	2.4	2.5
Washington			
1987 actual	5.0	3.4	3.3
1988	6.0	3.0	2.0
1989	6.1	2.0	1.0
Idaho			
1987 actual	4.9	0.6	2.5
1988	4.3	1.0	2.3
1989	4.9	1.0	1.8

The panel's regional outlook for 1988 calls for the continued strong growth of nonagricultural and manufacturing employment in Oregon and Washington and for moderate employment expansion in Idaho. This growth is expected to continue throughout the Pacific Northwest in 1989, but at slightly slower rates. All three states, according to the forecast panel, will have slower growth in real personal income in both 1988 and 1989.

What will the economy of the Pacific Northwest be like after the turn of the century? The latest economic and demographic forecast from the Bonneville Power Administration and the Northwest Power Planning Council shows the region growing more rapidly than the nation in terms of employment and population (Table 2). Particularly significant is their projection that regional manufacturing employment will expand slightly, while it contracts at the national level. This difference is a result of the region's strong base in lumber, pulp and paper, aluminum, chemicals, and food processing, and continued growth opportunities in aerospace and high-tech sectors. Much of the expanded market for northwest products will be in foreign exports, particularly to Pacific Rim countries. Despite the region's projected expansion of manufacturing employment over the next 24 years, the nonmanufacturing sectors will account for most of the job growth. Tourism, port-related services, and business service growth will drive the expansion in these sectors.

Ever since Adam Smith, it has been economic gospel that specialization—to achieve an efficient scale of operations and high productivity levels—is the route to manufacturing success. Smith's concepts have given us huge manufacturing plants that sell their products throughout the world and large-scale pollution of the earth's air and water.

A strikingly different idea is being tried by two Pierce County entrepreneurs, who started a company called Unisyn to develop a biowaste reduction technology. With financial support from Washington Energy and Rainier Bank, Unisyn's founders have gone to Waimanalo, Hawaii, to construct a prototype facility, which digests animal manure and produces four salable products: electricity, vegetables, spirulina (an algae-based health food), and an animal food supplement.

Instead of Adam Smith's "separation of the trades," Unisyn deliberately combines different manufacturing and agricultural processes. The methane coming out of the digester is used to generate electricity, and the rest of the digester's output is used to grow spirulina and fertilize vegetables or produce an animal food supplement. Energy from the generator is used to freeze-dry the spirulina and power the dairy from which the manure is obtained. Carbon dioxide-rich exhaust from the recycled ship engine that powers the generator is pumped into the spirulina ponds to enhance algae growth. Virtually every one of Unisyn's inputs and intermediate products is an ordinary waste product that is released to the air or water by larger, specialized manufacturing and agricultural processes.

The Unisyn technology may have applications wherever animal waste disposal is a problem. Inquiries from countries as dissimilar as Indonesia, the Netherlands, and Norway have given the company's founders and sponsors confidence that they are backing a viable technology.

An ambitious effort to assess the value that residents of urban areas place on amenities has appeared in the *American Economic Review* (Glenn Blomquist et al., "New Estimates of Quality of Life in Urban Areas," March 1988). The authors measured a total of 16 separate characteristics of urban areas, then coupled the characteristics with data on the housing costs and wages of 46,000 individuals living in 253 urban counties at the time of the 1980 census. The resulting regression equations allowed the authors to estimate an index for the value that the individuals place on specific aspects of urban quality of life. Positive index values indicate that residents of highly ranked

Table 2: Long-Run Economic and Demographic Forecast for the Pacific Northwest
average annual rate of growth, 1987-2020

	PACIFIC NORTHWEST	UNITED STATES
Total Employment	1.9	1.2
Manufacturing Employment	0.2	−0.3
Nonmanufacturing Employment	2.1	1.5
Population	1.4	0.8

SOURCE: Bonneville Power Administration and Northwest Power Planning Council

Table 3: Quality of Life Index Estimates, Selected Counties
in 1982 $

COUNTY	STANDARD METROPOLITAN STATISTICAL AREAS	STATE	INDEX	RANK
Pueblo	Pueblo	CO	3,288.72	1
Norfolk	Norfolk	VA	2,105.77	2
Arapahoe	Denver	CO	2,097.07	3
Ada	Boise	ID	533.39	72
Pierce	Tacoma	WA	298.78	98
Spokane	Spokane	WA	265.20	103
Benton	Tri-Cities	WA	113.47	134
Clackamas	Portland	OR	103.04	138
Washington	Portland	OR	58.12	148
King	Seattle	WA	−7.54	158
Yakima	Yakima	WA	−188.39	190
Clark	Vancouver	WA	−547.30	225
Snohomish	Seattle	WA	−562.70	227
Jefferson	Birmingham	AL	−1,539.30	251
Waukesha	Milwaukee	WI	−1,791.50	252
St. Louis	St. Louis	MO	−1,856.70	253

Mean plus 1 standard deviation 853
Mean (n=253 counties) 186
Mean minus 1 standard deviation −481

SOURCE: Blomquist et al., *American Economic Review*, March 1988

areas pay a premium—in the form of lower wages or higher housing costs—to live there. Correspondingly, negative index values indicate that residents of lowly ranked areas must be given a premium—higher wages or lower housing costs—to induce them to stay in the area.

The results are quite surprising for Pacific Northwest residents, who take pride in the quality of life of this region (Table 3). A combination of low average temperatures, high humidity, and high pupil-teacher ratios result in low rankings for many Pacific Northwest cities, compared with the winners: cities such as Pueblo and Denver, Colorado. Cities in the region that scored near or above the median benefited from higher ambient temperature or lower humidity scores. Many valued aspects of the quality of life in this region were not included in the 16 characteristics: low housing costs, short average commuting times, and access to lakes, rivers, the ocean, and mountains. The methodology the authors used is one that other quality of life researchers may want to adopt, but the specific implementation leaves out too many variables, and the rankings shouldn't be taken too seriously.

Joseph Cortright, of the Oregon Joint Legislative Committee on Trade and Economic Development, wrote to *Pacific Northwest Executive* to offer an alternative viewpoint to our "Employment and Establishment Growth" article (April 1988). Cortright questions the relevance of aggregated data and advocates the use of microdata to track individual establishments over time. He says, "The [micro]data consistently show that small businesses are the driving force in economic growth" and notes that "there is little evidence that tax breaks and other incentives have any measurable impact on industrial location decisions." He suggests that "states can have a measurable impact on these businesses, with business finance programs, marketing assistance, infrastructure provision, worker training, and other policies."

Small business growth

The position of *Pacific Northwest Executive* is that regional economic growth depends chiefly on the relative cost advantages of the region in national and international markets. In our perspective, neither large nor small businesses are drivers of growth, but are, instead, mechanisms for exploiting the advantages that a region has at a particular point in time. Whether large or small firms are in the best position to take advantage of market opportunities varies from one period to another. The boom in foreign exports, for example, is likely to boost employment at large firms. In "Worth Reading," page 19, we point out that the empirical evidence on small businesses has been collected during a very narrow time span; in "Economic Development: An Industry in Transition," which begins on page 14, we indicate that judging the efficacy of any set of development programs is a difficult undertaking. Making a case for the effectiveness of small business assistance programs will be as difficult an undertaking as making a case for industrial recruitment programs.

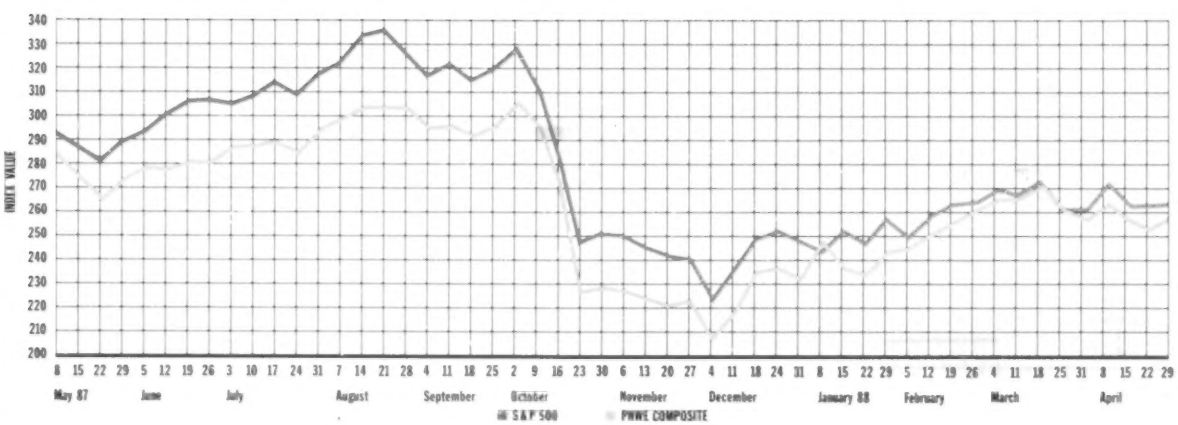
Staff Changes

With this issue, Professor Philip Bourque, the economics editor of *Pacific Northwest Executive* since its inception, is resigning from the magazine staff. His support as editor, contributor, and mentor during the past three years has been invaluable, and we wish him well as he continues his teaching and research in the Graduate School of Business.

Cathhan Hsu, an MBA student and research assistant on the magazine's Regionwatch staff, graduates in June. We offer her our congratulations and appreciation as she leaves *Pacific Northwest Executive* to embark on her career in business.

With the October issue, Professor Jeremiah J. Sullivan will assume the title of executive editor, responsible for the overall administration of the magazine, as well as the editorial content of the Management section. Dr. Paul Sommers, in the twin roles of research director and economics editor, will manage the content of the Regionwatch section.

The Pacific Northwest Executive Stock Index



Japanese Direct Investment in Washington

Direct investment in Washington's economy by Japanese firms is both a goal of state economic development efforts and a source of concern for Pacific Northwest residents. Some people fear a loss of control over Washington's economy. Others are concerned that future profits will flow to offshore investors. In fact, direct investment by Japanese interests in businesses within Washington has added modestly to the state's economic base and, to date, has given little to worry about in terms of a loss of control or the repatriation of profits. The sum of foreign investment in this state is still too small to be anything but a modest source of additional capital.

Using directories from the Washington Department of Trade and Economic Development and the Washington, D.C.-based Japan Economic Institute, the *Pacific Northwest Executive* staff has compiled a database showing employment at Japanese-owned firms by year and by industry. Prior to 1960, a handful of Japanese-owned firms operated in Washington; there are now 121 wholly or partially owned Japanese firms in the state (Figure 1). This foothold has been established gradually. There is no evidence of an accelerating rate of investment, but rather a steady accretion over time. As of mid-1987, the 121 establishments employed 4,160 people.

Data from the U.S. Department of Commerce show a higher employment level at Washington's Japanese-owned firms, which it terms "nonbank affiliates." Commerce's definition of Japanese-owned affiliates produced a 1984 estimate of 4,671 employees at such enterprises. No matter how Japanese-owned establishments are counted, however, they represent a small fraction of the more than 2 million people now employed in the state economy.

Industrial Profile

Trading firms were the first Japanese-owned enterprises to reach our shores, and, over time, trading and shipping companies have continued to outnumber other newcomers (Table 1). Many of the trading companies in Washington employ less than a dozen workers and export raw materials, such as logs and wood chips, and resource-intensive commodities, including paper products and processed seafood. A few import consumer goods, such as video games and computer and automobile parts.

Japanese shipping companies established local operations to support the trading companies and have become major tenants in the ports of Seattle and Tacoma. Although shipping company operations were set up to support exports of raw materials, much of their growth during the last 20 years has been fueled by the expansion of containerized import traffic, which is transshipped through Seattle and Tacoma to major markets in the United States and Canada.

During the 1970s, manufacturing plants began to set up operations, beginning with fish processing and wood products companies, then including glass and airplane parts manufacturers. In the 1980s, computer parts companies and consumer-oriented electronics assembly operations have been added to the list.

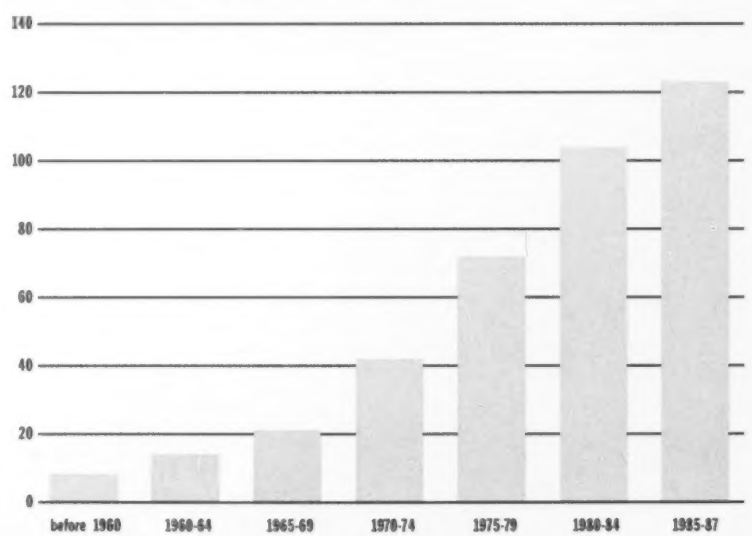
Most of the Japanese-owned enterprises are quite small; only 10 have 100 or more employees. The largest company, which has 1,200 workers, is an aluminum smelter, and the second largest, with 790 employees, manufactures silicon wafers.

Data gathered by the Japan Economic Institute note whether each manufacturer was an existing firm acquired by Japanese investors or a start-up activity. Of the 23 manufacturing firms operating in Washington, seven (30 percent) were acquired. These seven firms represent 40 percent of the employment at Japanese-owned manufacturing firms, indicating that the acquired firms are slightly larger on average than the start-ups.

Conclusions

Since more than two-thirds of Japanese-owned manufacturing firms in this state are new business activities, not acquired firms, they represent an increment in the state's economic growth. The trading and shipping companies are also net additions to the state's economic base that could not have been developed by American entrepreneurs, given the pervasive nontariff barriers that limit U.S. participation in Japan's distribution system. This expansion of the state economy financed by offshore investors has re-

Figure 1: Number of Japanese-Owned Firms in Washington



SOURCES: Japan Economic Institute of America and Washington Department of Trade and Economic Development

Table 1: Japanese-Owned Firms by Industry and Year of Acquisition or Start-Up

	AGRICULTURE/ FORESTRY/ FISHERIES	MANUFACTURING	SERVICES	TOTAL
Before 1960	1	0	5	6
1960-64	0	0	7	7
1965-69	0	0	8	8
1970-74	1	1	19	21
1975-79	2	5	23	30
1980-84	2	6	24	32
1985-87	5	8	4	17
TOTAL	11	20	90	121

SOURCES: Japan Economic Institute (Washington, D.C.) and Washington Department of Trade and Economic Development, Investment Division (Seattle)

Table 2: Employment at Foreign-Owned Enterprises in Washington, 1984

COUNTRY	EMPLOYMENT
United Kingdom	7,872
Canada	6,119
West Germany	5,677
Japan	4,671
Rest of the World	8,216
TOTAL	32,555

SOURCE: U.S. Department of Commerce

sulted in net new employment, direct and indirect income streams, and tax revenues.

The picture that develops from this profile of Japanese direct investment in Washington shows a gradual build-up of business relationships based on the traditional strengths of the Washington economy, as well as some of the emerging high-tech sectors. This profile illustrates three points. First, there is no tidal wave of Japanese investment, and, therefore, no threat of a loss of control or a mortgaged economic future. The direct investment by Japanese firms in Washington is simply too small and growing too slowly to cause much concern. Second, there is little apparent effect from changing exchange rates. The dollar went way up in value from 1979 to 1984 and way down from 1985 onward, but the small Japanese presence in Washington has grown steadily throughout the period. Third, direct foreign investment by countries such as Canada, Great Britain, and West Germany provides more employment for Washington residents than do the Japanese-owned enterprises (Table 2). European investment in Washington has not produced nearly as much concern about the loss of control or profits to foreigners. Foreign ownership in general is of little concern because it is so small compared to total employment; 32,500 residents were employed at foreign-owned enterprises in Washington in 1984, and 1.8 million people were employed by domestically owned enterprises.

It is the steady persistence of international direct investment and trade growth that leads many observers to predict a growing internationalization of the world's national economies. This infusion of foreign capital, and its associated expansion of foreign markets for products manufactured in this state, makes an important contribution to the prosperity of our regional economy.

Foreign Direct Investment in the United States

The concerns of Pacific Northwest residents about foreign investment are a microcosm within the national debate over the impacts of foreign investment. "Foreign money," write Martin and Susan Tolchin in their newly released book *Buying into America*, "is changing the face of America, the lives of Americans, and the nature of our political processes." Throughout the book, which has been featured in national print and television reviews, the authors argue that foreign investment is overwhelming the American economy. Using phrases such as "trojan horse" and "faustian bargain," their intent is clearly to convince readers that foreign investment is a threat to the U.S. economy.

The available data do not support the idea that foreign investment is inundating the U.S. economy. While the Tolchins' recitation of cases of foreign acquisition is irrefutable, the authors fail to put that foreign investment into any reasonable context. They don't tell readers just how much of the business assets of this country has been acquired by foreign interests; they leave, instead, the impression that the foreign stake in the United States is large and rapidly increasing. The facts contradict the impression.

The U.S. Department of Commerce must be notified of the acquisition by foreign interests of 10 percent or more of the equity of an existing U.S. firm or the establishment of a new firm that will be at least 10 percent foreign-owned. The department also tracks intercompany loans involving foreign-owned lenders or recipients and the reinvestment of the earnings of foreign-owned firms. Based on these three sources of data, Commerce regularly publishes estimates of the direct investment position of foreign owners in the U.S. economy. These data include the value of land, buildings, equipment, and other forms of equity. As shown in the accompanying table, the foreign direct investment position in the United States has increased from $124 billion in 1982 to $209.3 billion in 1986.

While $209.3 billion is a large number, the foreign direct investment position from 1982 to 1986 is a very small proportion of total U.S. business assets—and the proportion becomes even smaller when you consider that land values are included in the foreign assets estimates and excluded from the total assets estimate. Investors who own 2 to 3 percent of a country's business assets cannot overwhelm domestic investors who own 97 to 98 percent of the assets. That simple fact has been ignored by the Tolchins and others who express alarm about the increasing penetration of the U.S. economy by foreigners.

Foreign Direct Investment and Total Business Capital in the United States

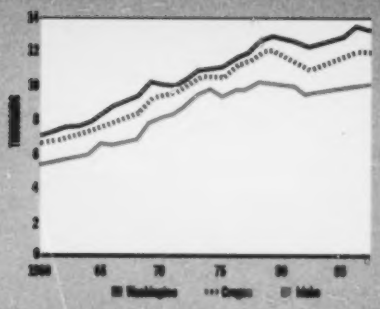
	FOREIGN Billion $	TOTAL Billion $	FOREIGN/ TOTAL percent
1986	209.3	7,894.2	2.99
1985	184.6	6,968.3	2.76
1984	164.6	6,432.9	2.56
1983	137.1	6,094.7	2.25
1982	124.7	5,958.2	2.13

SOURCE: U.S. Department of Commerce

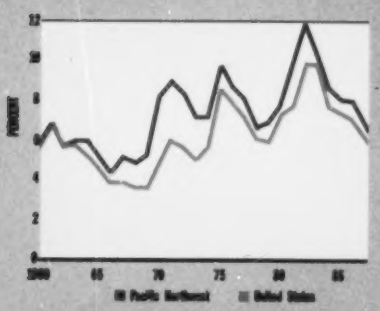
REGION WATCH

Pacific Northwest Annual Economic Indicators

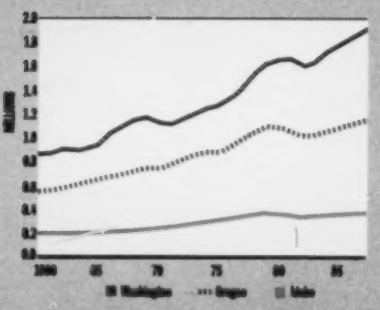
REAL PERSONAL INCOME PER CAPITA
In 1982 dollars



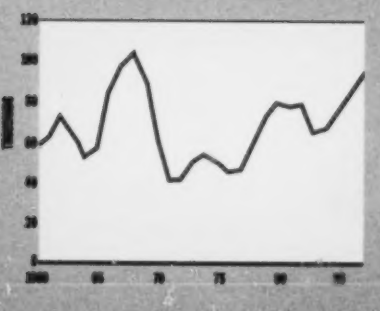
UNEMPLOYMENT RATE



NONAGRICULTURAL WAGE AND SALARY EMPLOYMENT



AEROSPACE EMPLOYMENT IN WASHINGTON



POPULATION[A,1]
In thousands

YEAR	WA	OR	ID
1960	2,853	1,700	667
1965	2,867	1,937	686
1970	3,417	2,092	717
1975	3,639	2,330	832
1980	4,132	2,633	944
1983	4,305	2,680	988
1984	4,349	2,676	999
1985	4,409	2,687	1,005
1986	4,463	2,702	1,002
1987	4,538	2,724	998

PERSONAL INCOME[A,2]
In millions $

YEAR	WA	OR	ID
1960	6,772	3,930	1,236
1965	8,867	5,329	1,679
1970	14,234	8,369	2,486
1975	23,260	14,870	4,548
1980	44,569	28,055	8,128
1983	54,587	29,984	9,777
1984	58,341	32,246	10,358
1985	62,269	34,113	10,981
1986	66,978	36,027	11,250
1987	70,991	37,826	11,800

FARM INCOME[A,3]
In millions $

YEAR	WA	OR	ID
1960	268	185	159
1965	285	184	238
1970	361	235	277
1975	943	431	438
1980	853	582	512
1983	1,238	478	567
1984	1,188	583	521
1985	1,029	631	494
1986	1,384	765	533
1987	1,220	770	705

IMPLICIT[B] PRICE DEFLATOR
for personal consumption
1982 = 100

YEAR	US
1960	32.9
1965	35.6
1970	42.9
1975	59.2
1980	86.6
1983	104.1
1984	108.1
1985	111.9
1986	114.3
1987	118.9

UNEMPLOYMENT[C] RATE
percent of labor force

YEAR	WA	OR	ID
1960	6.4	4.9	6.0
1965	5.4	4.8	4.8
1970	9.2	7.1	5.8
1975	9.5	10.6	7.3
1980	7.9	8.3	6.4
1983	11.2	10.8	7.5
1984	9.5	9.4	8.3
1985	8.1	8.8	6.5
1986	8.2	8.5	6.5
1987	7.6	6.2	5.7

TOTAL[C] EMPLOYMENT
In thousands

YEAR	WA	OR	ID
1960	1,020	682	284
1965	1,197	776	267
1970	1,285	803	281
1975	1,412	929	342
1980	1,828	1,189	397
1983	1,838	1,192	390
1984	1,857	1,230	400
1985	1,921	1,200	405
1986	2,018	1,245	403
1987	2,083	1,302	401

NONAGRICULTURAL[C] WAGE AND SALARY EMPLOYMENT
In thousands

YEAR	WA	OR	ID
1960	812.6	580.2	155.2
1965	896.6	687.4	177.6
1970	1,088.0	799.2	200.3
1975	1,225.7	837.4	273.0
1980	1,608.3	1,044.6	330.0
1983	1,586.1	986.7	317.9
1984	1,650.9	1,006.9	330.5
1985	1,718.4	1,029.0	335.9
1986	1,769.9	1,058.5	333.6
1987	1,839.3	1,094.0	332.9

MANUFACTURING EMPLOYMENT[C]
In thousands

WA	OR	ID
218.6	144.4	28.9
227.0	158.2	33.3
239.4	172.3	40.4
244.0	182.1	47.8
308.7	215.1	53.3
278.4	188.8	50.3
288.1	201.1	54.8
295.5	199.3	54.6
305.1	198.4	52.1
316.8	204.9	53.9

AEROSPACE[C] EMPLOYMENT
In thousands

YEAR	WA
1960	57.8
1965	57.0
1970	61.5
1975	58.4
1980	79.6
1983	65.0
1984	68.6
1985	76.1
1986	85.0
1987	92.8

LUMBER AND WOOD[C] PRODUCTS EMPLOYMENT
In thousands

WA	OR
44.4	71.9
46.9	74.2
42.2	66.8
47.2	69.6
47.0	69.5
42.2	62.6
41.3	66.7
38.3	63.6
38.4	64.6
46.0	67.4

PAPER[C] EMPLOYMENT
In thousands

WA
18.0
19.5
19.8
16.4
17.6
15.8
16.2
16.7
16.7
16.5

CONSTRUCTION EMPLOYMENT[C]
In thousands

WA	OR	ID
64.6	26.1	9.6
66.4	28.1	9.6
53.3	29.5	10.9
59.5	35.3	10.1
92.6	46.5	15.8
74.2	27.0	13.2
79.6	30.2	14.6
80.6	33.1	15.1
84.5	34.3	14.6
87.3	34.5	13.6

CONSTRUCTION CONTRACTS[C]
In millions $

YEAR	WA	OR	ID
1960	632.3	364.6	115.4
1965	1,006.7	585.7	186.8
1970	1,478.2	634.3	197.4
1975	2,818.3	1,035.9	398.6
1980	4,795.1	1,926.1	634.5
1983	3,867.8	1,414.7	544.8
1984	3,748.1	1,744.7	617.6
1985	4,409.1	1,833.8	758.0
1986	5,054.6	1,883.8	679.9
1987	5225.7	1,862.5	637.6

NEW HOUSING UNITS AUTHORIZED[A,C]
In numbers of units

YEAR	WA	OR	ID
1960	NA	NA	NA
1965	29,131	15,630	1,846
1970	28,262	16,980	3,565
1975	35,200	20,091	8,172
1980	33,375	19,480	5,795
1983	27,481	8,694	4,225
1984	30,367	8,000	4,193
1985	35,474	11,297	4,307
1986	36,434	10,662	3,804
1987	37,597	12,592	3,177

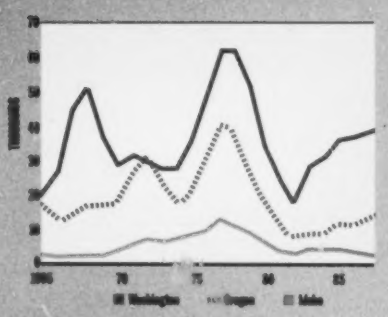
AVERAGE[D,G] LUMBER PRICE
1982 board ft.

YEAR	PNW
1960	$75.81
1965	76.09
1970	91.88
1975	154.63
1980	267.59
1983	228.88
1984	215.81
1985	214.49
1986	214.46
1987	233.54

PLYWOOD[E,2,4] PRODUCTION
In million sq. ft.

YEAR	WA & OR
1960	6,535
1965	9,720
1970	8,663
1975	7,722
1980	6,786
1983	8,141
1984	8,319
1985	8,440
1986	9,545
1987	10,093

NEW HOUSING UNITS AUTHORIZED



LUMBER PRODUCTION[D,2]
In million board ft.

YEAR	WA	OR
1960	3,377	7,402
1965	3,648	7,580
1970	3,189	6,680
1975	3,104	6,342
1980	3,381	5,784
1983	3,821	6,579
1984	3,697	7,202
1985	3,419	7,211
1986	4,132	8,149
1987	4,467	8,810

WOOD PULP[A] PRODUCTION
In thousand short tons

YEAR	WA	OR
1960	NA	NA
1965	NA	NA
1970	3,848	2,643
1975	3,585	2,480
1980	3,519	3,787
1983	3,622	2,845
1984	4,180	2,846
1985	4,101	2,925
1986	4,285	2,948
1987	NA	NA

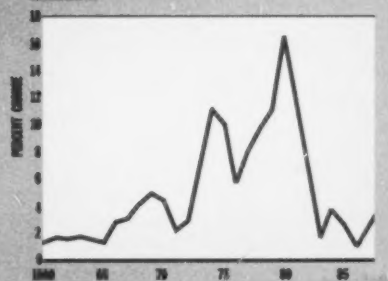
LOG[D] EXPORTS
In million board ft.

YEAR	WA & OR
1960	NA
1965	901
1970	2,216
1975	2,225
1980	2,632
1983	2,592
1984	2,722
1985	3,004
1986	2,780
1987	3,168

FOREIGN TRADE[A,B]
Portland and Seattle Customs Districts
In millions $

YEAR	EXPORTS	IMPORTS
1960	625	305
1965	829	427
1970	2,688	1,651
1975	6,224	4,781
1980	15,770	11,836
1983	13,723	12,826
1984	14,216	16,323
1985	15,533	17,349
1986	18,006	19,987
1987	19,378	22,065

CONSUMER PRICE INDEX
Seattle/Everett



ALUMINUM[A,B] PRODUCTION
In thousand tons

YEAR	PNW
1960	527.3
1965	796.5
1970	1,390.0
1975	2,411.0
1980	1,574.4
1983	1,174.8
1984	1,574.3
1985	1,356.4
1986	1,242.8
1987	1,382.7

ELECTRICITY[A,7] PRODUCTION
In megawatts

YEAR	PNW
1960	69,386
1965	99,873
1970	143,993
1975	171,797
1980	206,221
1983	181,405
1984	195,157
1985	193,893
1986	190,758
1987	205,457

BPA ENERGY SALES[I]
In thousands of MWH

	29,449
	37,211
	56,327
	68,934
	72,448
	82,781
	87,936
	83,753
	81,586
	68,984

FOREIGN EXCHANGE INDEXES

YEAR	PNW[K,8] Nominal	PNW[K,8] Real	Federal[L,9] Reserve Board Nominal
1979	88.09	88.09	88.09
1980	90.82	90.83	87.39
1981	92.58	89.98	102.94
1982	101.56	100.81	116.57
1983	102.96	99.81	125.34
1984	106.94	103.70	138.19
1985	111.35	108.96	143.81
1986	94.45	82.94	112.22
1987	85.36	65.27	96.94

CONSUMER PRICE INDEX[M,10]
1967 = 100

YEAR	PORTLAND	SEATTLE/EVERETT
1960	29.8	29.8
1965	32.3	31.0
1970	38.7	37.4
1975	53.5	51.1
1980	87.2	82.7
1983	98.1	98.3
1984	102.8	103.0
1985	106.7	105.6
1986	108.2	106.7
1987	110.9	109.2

AVERAGE PRICE[I,11] OF BPA POWER SALES
In mills per KWH

2.30
2.36
2.38
3.40
6.25
16.60
20.73
21.14
18.13
21.04

AVERAGE HOURLY EARNINGS[M]
for manufacturing production employees

YEAR	WA	OR	ID
1960	$2.63	$2.55	$2.25
1965	2.98	2.94	2.65
1970	4.06	3.82	3.29
1975	5.82	5.53	4.77
1980	9.41	8.65	7.55
1983	11.42	10.21	8.96
1984	11.61	10.44	9.34
1985	11.83	10.50	9.41
1986	11.71	10.57	9.86
1987	11.97	10.55	9.70

SOURCES:
- A. Bureau of the Census, U.S. Dept. of Commerce
- B. Bureau of Economic Analysis, U.S. Dept. of Commerce
- C. F.W. Dodge Division, McGraw-Hill Information Systems Co.
- D. Western Wood Products Assoc.
- E. American Plywood Assoc.
- F. Washington State Employment Security Dept., State of Oregon Employment Div., State of Idaho Dept. of Employment
- G. U.S. Forest Service
- H. Direct Service Industries, Inc.
- I. Pacific Northwest Utilities Conference Comm.
- J. Bonneville Power Administration
- K. Computed by *Pacific Northwest Executive* using data from the International Monetary Fund and the Directorate-General, Republic of China
- L. U.S. Federal Reserve Board
- M. Bureau of Labor Statistics, U.S. Dept. of Labor

FOOTNOTES:
1. Includes armed forces residing in each state; 1965, 1975, 1981-1987 are July 1 estimates
2. The 1987 figures are estimates
3. FOB mill realization, coast region (Oregon and Washington) for Douglas fir and Hem-fir
4. Includes all types of structured panels
5. Data do not account for export of aircraft or shipments that pass through the Northwest and clear customs elsewhere. The 1960 figures do not include imports or exports by air
6. Includes nine primary producers in Washington, Oregon, and Montana
7. One Megawatt = 1,000 kilowatts
8. PNW indexes weighted by 1985 imports and exports through the Portland and Seattle Customs Districts to/from 15 countries: real index deflated using Export Unit Values; base = 88.09 in 1979, which is equal to the Federal Reserve Board index in 1979
9. Federal Reserve Board index based on 1972-76 trading patterns of eight European countries, plus Canada and Japan; 1973 = 100
10. CPI for all urban consumers, annual average
11. One mill = 0.1 cents

Economic Development: An Industry in Transition

As government and private-sector leaders have struggled with the impacts of past recessions and industrial retrenchment, economic development activities have expanded dramatically throughout the Pacific Northwest. These efforts, carried out by state and local public agencies and various semiprivate organizations, have also been motivated by perceived opportunities on the part of the developers and by their desire to garner a share of emerging industries for their states.

Think of economic development as an industry. A set of "firms" employs people and capital resources to produce an output, generally defined as more jobs and/or higher incomes within a defined geographic area. By examining the resources these organizations employ, the processes they use, and the outcomes they influence, we can gain some sense of the impact of this industry on the regional economy. Within the alphabet soup of development organizations and agencies that exists in Washington, we've chosen to focus mainly on the Department of Trade and Economic Development (DTED) and the local associate development organizations (ADOs), which form the backbone of the state's economic development program.

Origins of Economic Development

Economic development has a long tradition in the Pacific Northwest. Oregon, for example, started encouraging immigrants to settle in the area in the 1880s. In 1914 the state's Immigration Commission published an album containing 190 photos of agricultural Oregon. This album, designed to lure newcomers from Scandinavia, was subtitled in Swedish, Norwegian, Danish, and Finnish.

The Snohomish County Economic Development Council is the oldest of the formal economic development councils (EDCs) in Washington. Started in 1955 with a $30,000 budget contributed entirely by the private sector, the "council" at that time consisted of office space and a salary for a retired oil company executive, Ken Newerf, who worked to bring new industry into the Everett area. Other economic development organizations, the Seattle and Spokane industrial councils, for example, trace their roots to development activities started up under the auspices of chambers of commerce in the late 1950s and 1960s. Grant County, with cheap hydroelectric power to spare and industrial sites to offer, successfully marketed itself as a site for clean, medium-sized industrial operations. The Tri-Cities Industrial Council began as a promoter of the nuclear industry.

As a result of the Boeing crash of 1969-70, business and public-sector leaders in the Puget Sound area realized that a more diversified economic base was needed. With contributions from the private sector, the City of Seattle, King County, the Port of Seattle, and the Economic Development Administration (EDA) of the U.S. Department of Commerce, a new, more professional Seattle-King County Economic Development Council was created in 1971. In 1972 the Seattle Area Industrial Council was merged with the EDC.

One of the successes of this early activity came when the council helped secure large EDA grants, which were used to expand ports in the Puget Sound and provide the infrastructure needed to develop the region's international trade activity. The Seattle EDC conducted trade missions to Asia and Europe to find foreign markets for local products and attract foreign investors to the Seattle area. It also looked at community development opportunities in the central and Duwamish River areas of Seattle and explored strategies for development of the forest products industry.

The Seattle-King County EDC soon realized that there was little open industrial space available within the city and that, to accomplish any significant industrial development, the council had to promote sites outside King County as well. As a consequence, the organization was expanded in 1974, adding Pierce, Snohomish, and Kitsap counties to its jurisdiction and changing its name to the Economic Development Council of Puget Sound.

The back-to-back recessions of the early 1980s led to a revitalization and reorganization of Washington's local economic development organizations. Newly elected Governor Booth Gardner, who had campaigned on an economic development platform, used the modestly successful models offered by the existing state programs to revamp the entire effort. A statewide network of county economic development organizations was created, and the Economic Development Partnership for Washington was formed as a statewide coordinating body for private-sector efforts. In addition, the state improved and expanded its own efforts under the leadership of an economic development cabinet.

Budgets and Personnel

In the United States, 15,000 economic development organizations spend billions of dollars each year on local economic development. These organizations endeavor to help the private sector create jobs, thereby raising the income levels of local residents and increasing tax revenues to the public sector. Their activities are aimed at bringing in new firms, preventing the departure of existing firms, and encouraging the expansion of established firms.

Washington's economic development program, based on 1982 data, was typical of the efforts in other states (Table 1). Its expenditure per capita of $1.33 on economic development were very close to Oregon's $1.37 and placed the state in the middle of the pack compared to others. Washington's economic development budget has increased rapidly since Governor Gardner took office (Figure 1). In constant 1982 dollars, the annual budget for economic development increased from $1.33 per capita in 1982 to $2.51 per capita for the 1987-89 biennium, and the 1988 supplemental budget raised spending a bit further. The real resources going into the Department of Trade and Economic Development budget have doubled since Gardner took office. The budgets for development activities at other state agencies have increased as well.

At present, a sizeable proportion of Washington State government is involved to some degree in economic development. The governor's economic development cabinet includes representatives of 25 agencies, including the major state offices: Trade and Economic Development, Community Devel-

Table 1: Size of State Economic Development Programs, 1982

	BUDGET *in millions $*	RANK	DOLLARS PER CAPITA	RANK
ALABAMA	2.9	34	0.74	38
ALASKA	N.A.	N.A.	N.A.	N.A.
ARIZONA	2.5	38	0.83	37
ARKANSAS	N.A.	N.A.	N.A.	N.A.
CALIFORNIA	8.1	17	0.33	45
COLORADO	2.0	39	0.65	41
CONNECTICUT	3.8	25	1.22	31
DELEWARE	3.1	30	5.24	13
FLORIDA	17.0	11	1.62	24
GEORGIA	9.1	15	1.60	25
HAWAII	12.7	13	12.72	7
IDAHO	N.A.	N.A.	N.A.	N.A.
ILLINOIS	197.2	3	17.18	6
INDIANA	3.6	27	0.66	40
IOWA	2.6	37	0.88	35
KANSAS	3.1	31	1.29	30
KENTUCKY	136.3	4	36.89	1
LOUISIANA	7.8	18	1.78	21
MAINE	1.0	44	0.88	36
MARYLAND	48.5	6	11.35	8
MASSACHUSETTS	3.2	29	0.56	43
MICHIGAN	205.4	2	22.52	4
MINNESOTA	40.8	9	9.87	9
MISSISSIPPI	4.4	24	1.73	23
MISSOURI	2.7	36	0.54	44
MONTANA	21.7	10	26.95	2
NEBRASKA	3.5	28	2.20	19
NEVADA	0.9	45	1.07	32
NEW HAMPSHIRE	1.7	42	1.75	22
NEW JERSEY	5.2	21	0.70	39
NEW MEXICO	9.1	14	6.68	10
NEW YORK	41.0	8	2.33	18
NORTH CAROLINA	110.0	5	18.29	5
NORTH DAKOTA	N.A.	N.A.	N.A.	N.A.
OHIO	278.6	1	25.86	3
OKLAHOMA	1.8	41	0.56	42
OREGON	3.6	26	1.37	26
PENNSYLVANIA	45.3	7	3.86	15
RHODE ISLAND	4.9	23	5.14	14
SOUTH CAROLINA	3.0	32	0.93	33
SOUTH DAKOTA	0.9	46	1.30	28
TENNESSEE	8.5	16	1.82	20
TEXAS	1.9	40	0.12	46
UTAH	1.4	43	0.90	34
VERMONT	2.8	35	5.45	12
VIRGINIA	15.0	12	2.73	16
WASHINGTON	5.7	20	1.33	27
WEST VIRGINIA	5.0	22	2.55	17
WISCONSIN	6.1	19	1.30	29
WYOMING	3.0	33	5.88	11

SOURCE: The Council of State Governments

opment, Labor and Industries, Employment Security, and Social and Health Services. In addition, some cities have economic development offices. Port districts often have formal economic development functions. Every county in the state has an EDC or similar organization. A few corporations have employees who work full-time on economic development. About 500 professionals are working full-time on economic development throughout Washington.

The entire state is covered by a network of 33 associate development organizations; some serve more than one county. Many of these organizations are called economic development councils, but port districts and other entities are designated as ADOs in some counties. Each organization has entered into a contract with the Department of Trade and Economic Development, which provides the organization with an annual cash grant of $25,000, under the condition that the ADO match that sum with at least $12,500 in locally raised funds. The local matching funds can consist of federal and local government grants and private donations, but not in-kind services or other state funds. In return for the grant, the organization agrees to carry out certain studies and activities.

The Information Business

What do economic developers do? Much of their activity is aimed at conveying information about companies and sites for business activity to a variety of entities that can then take action based on that information (Figure 2). The associate development organizations are the front-line economic developers in the industry; they serve as conduits of information for interested firms about the characteristics of the local economy, government programs that try to help business firms, and government permitting and regulatory requirements. They also work the information channels in the opposite direction, providing the details about firms that are looking for business sites to state program managers who may be able to provide a subsidized loan for infrastructure, the information about problems in getting permits to local government officials, and so on. By serving as the first point of contact for a firm thinking of locating or expanding in a particular area, the ADOs help coordinate the efforts of the local and state government agencies that may become invoived. Without such a central coordinating mechanism, the response of a community to an industrial com-

pany's inquiry would be fragmented and incomplete.

Industrial recruitment efforts were common in the early years of many economic development councils. Several councils, including those in Tacoma-Pierce County and Clallam County, conducted target industry studies to identify those firms that could be attracted to a specific area, given that location's strengths, weaknesses, and future development possibilities. Marketing programs were devised to approach firms in the targeted industries and encourage them to establish branch plants. The councils also worked to preserve jobs at local industrial plants that were in danger of shutting down or moving away. The Tacoma Economic Development Board, for example, invested a good deal of effort in trying to retain the jobs at the ASARCO smelter. The smelter ultimately closed down, and the board then helped many ex-ASARCO employees find new jobs within Pierce County. Tax incentives, subsidized loan programs, site enhancements, and employee training and retraining programs quickly became the stock in trade of the economic developers.

The local EDC is not the direct source for tax incentives, loans, or training—local municipalities and state and federal governmental agencies provide those. The local council serves as the source for information about these opportunities and as the public relations and "sales staff" for public programs that cannot advertise or market themselves as freely as private-sector organizations can.

The Northwest Trade Adjustment Center, for example, a federally funded program to assist manufacturers that are losing sales to imports, is legally prohibited from advertising. It funds 75 percent of the cost of privately provided consulting services for about 50 manufacturing firms per year in a five-state territory. Without a network of local economic development organizations, candidate firms would never find out about the Seattle-based program.

Prior to 1985, the state development agency, then called the Department of Commerce and Economic Development, supported local efforts by providing economic research services, maintaining databases on industrial prospects, promoting tourism, and organizing trade promotion and investment recruitment efforts. The aim of the department was to bring in firms or individual tourists from outside the state and convince these firms and individuals to invest in facilities in the state or to spend their vacation dollars here, thereby creating jobs for Washington residents.

Many economic development professionals are now concentrating on local firms that are expanding, retaining jobs at companies that are in danger of failing, and aiding entrepreneurs in the difficult process of starting a new business. The Seattle-King County EDC was reorganized in 1985, when it reassumed a single-county focus. It now helps growing organizations, such as NeoRx, Immunex, and the Fred Hutchinson Cancer Center, find new sites within the county and works on the complex zoning, land-use, and transportation problems involved in expansionary moves. The council's tactics are based on a fear that, absent its efforts, these companies would move away from the urban area or, in the case of research and development operations, build out-of-state factories.

The changing focus of the development agencies is in part a response to public concern over the inducements offered in industrial recruitment programs. Virtually all states offer incentives, so the net effect on location decisions is minimal. The apparent waste of public resources, however, destroys support for economic development efforts. At a recent development conference, Mike Layton, a *Seattle Post-Intelligencer* columnist, stated, "My natural skepticism gives way to cynicism when talk turns to economic development."

The changed focus of the developers is also a reaction to recent evidence that few firms move across state lines and that job growth is more closely related to start-ups and the expansion of existing firms. MIT Professor David Birch's research on job growth shows that net job creation is due to the birth and expansion of small firms, with large firms barely holding their own in many areas. The University of Washington's Professor William Beyers, working with the Central Puget Sound Economic Development District, has determined that many of the expanding, smaller firms in the central Puget Sound are producer-service firms, which sell their services outside the metropolitan area. These small businesses are important contributors to the economic base, and economic developers want to encourage these job-producers.

Many EDCs are now creating business assistance programs through which existing or new firms can receive management counseling, marketing assistance, help in obtaining capital, incubator facilities in which to start a company, training programs for employees, and other services. As in the past, the EDC often acts as a referral service to direct the entrepreneur or firm to another organization, which actually provides the service. The goal of these programs is to encourage entrepreneurial activity, to increase the very small proportion of start-ups that survive and prosper, and to help smaller firms find both domestic and overseas markets for their products and services.

The speed with which the development focus has changed from industrial recruitment to business assistance has been brisk. Bill Lotto, the president of the Economic Development Executives of Washington, says, "The economic development field is changing rapidly. People who know the sub-

Figure 1: Biennial Budgets of the Department of Trade and Economic Development by Program Type

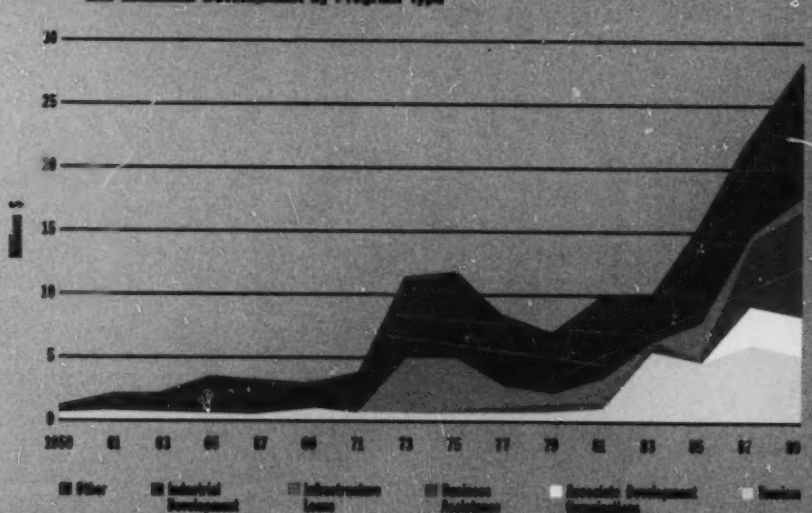
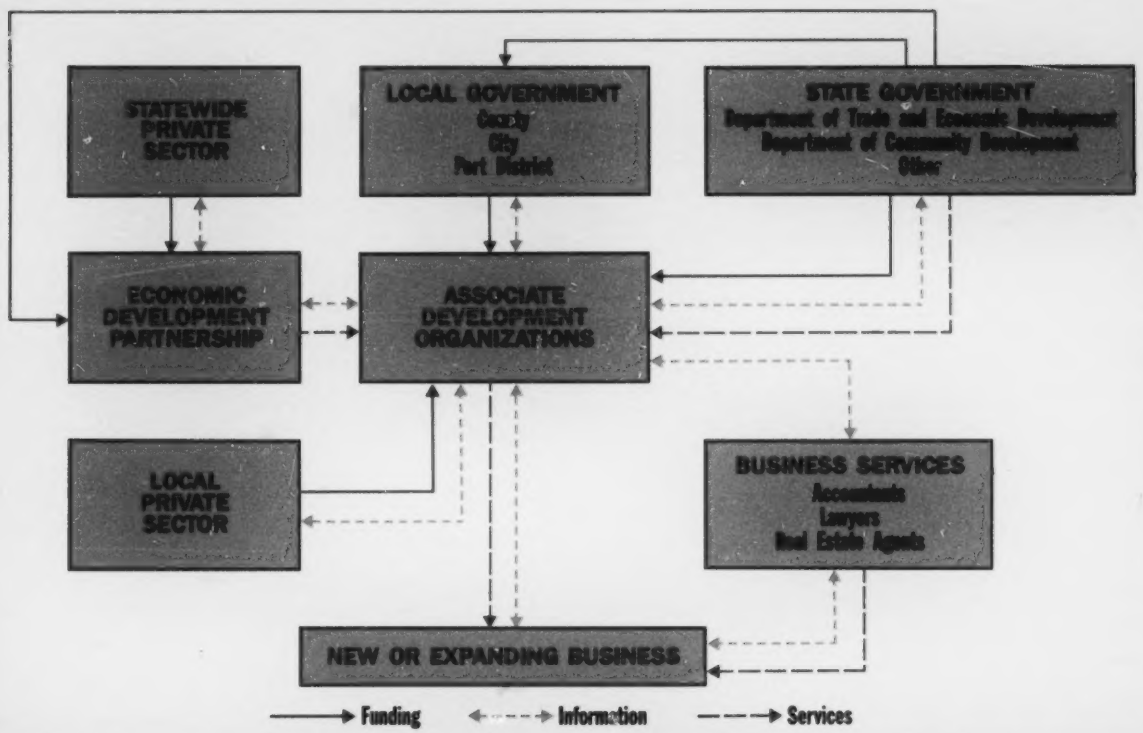


Figure 2: Organization of the Economic Development Industry



ject well probably haven't been looking at what's going on around them." Evidence of the shift can be seen in the changing budget priorities at the state level. The varying width of the bands in Figure 1 shows the total Department of Trade and Economic Development budget, as well as the amount spent in each major program. The rapid overall growth of the budget in the last two biennia and the increases in spending on business assistance and associate development organizations demonstrate the department's changed priorities.

Since the late 1950s, the DTED has promoted tourism, industrial development, and planning, research, and administrative efforts. In the 1971-73 and 1973-75 biennia, a big push was made to fund site-specific infrastructure extension and enhancement projects to provide a base for local industrial recruitment efforts. In the 1979-81 biennium, the tourism promotion budget was boosted from $900,000 to $1.3 million, then given an even bigger increase to $5.5 million in the 1981-83 biennium. Since then, the tourism budget has remained steady.

With Governor Gardner's election, state lawmakers gave big budget increases to a statewide network of local economic development organizations and to business assistance activities, which made an effort to smooth business relationships with state government by creating a Business Assistance Center within the Department of Trade and Economic Development. Other areas of the department were expanded across the board, but by smaller percentages.

Assessing the Impact

What have these economic development efforts done for the state's economy? Assessing the impact of development work is a difficult undertaking. Consider industrial recruitment efforts, which in many ways are the most straightforward cases. If a business knocks on a development agency's door or is contacted by the agency, it receives information and technical assistance. Assume that it later decides to open or expand a business within the state. The state development agency or associate development organization that worked with the firm will then take credit for that business decision and for the jobs and investment that it brings. "It is not always possible to say exactly what [development agencies] have accomplished," observes John Levy in *Economic Development Programs*. "By the time a firm moves into an area, its officers have probably had contact with local brokers, bankers, planning and zoning officials, public officials, businessmen, and various others. In a sense, bringing in the company has been a collective effort, and it is hard to determine exactly what role any single party has played."

To measure the efficacy of economic development efforts, Cletus Coughlin and Phillip Cartwright, in a paper published in the *Journal of Regional Science*, presented an econometric model based on 1980 foreign export promotion expenditures for all 50 states. The results suggested that an increase in export promotion of $1,000 is associated with $432,000 in increased exports—although the authors pointed out that this estimate is high, in part, because there is no allowance for federal or private export promotion expenditures. This paper highlights the problems endemic to any econometric exercise: even with a relatively well developed theoretical framework and the best available data, it is often impossible to

include all the relevant variables or produce convincing evidence of the impact of a program that involves the joint efforts of a number of actors. The conclusion that the true impact of a $1,000 promotional expenditure is a $432,000 increase in exports does not meet a common sense reasonableness test. Columnist Mike Layton's cynicism and skepticism would not be allayed by such a determination.

Development agencies provide their own measures of effectiveness. The Department of Trade and Economic Development in Olympia, for example, adds up the jobs created or retained as a result of programs the state administers and the projected private-sector investment that result from these efforts. The activities summed up in this assessment include programs operated directly out of the department and the statewide network of local development organizations that are partially funded by the DTED. According to the department's 1985-86 activity report, a total of 444 firms received assistance, resulting in 18,199 jobs created or retained and a projected private-sector investment of $1.04 billion.

Local economic development agencies compile similar statistics to convince local funders of the efficacy of their efforts (and to feed data into DTED's accounting system). For example, the Economic Development Council of Snohomish County notes in its 1987 annual report that staff answered 429 inquiries for information and held substantive discussions regarding investment opportunities in Snohomish County with 178 companies. This report contains the claims that "as a result of these marketing efforts, 1,700 new jobs were created" and that business retention efforts "saved 735 local jobs that would have been permanently lost." Bob Levin, executive director of the Clallam County council indicates that his organization keeps careful records of the nature of each contact with a business firm so that both the number of contacts and the quality of the service provided to each firm can be evaluated by the city, county, and port officials who provide most of his annual budget.

Interpreting Impact Data

How reasonable are these estimates? During the two calendar years covered by the department's report, total employment in Washington grew by 143,000. The aerospace sector's addition of 18,400 workers was not dependent on DTED efforts since the driving force was the Boeing Company and it was responsible for much of the direct employment change. Boeing does not rely on the department to find export opportunities nor does it require management counseling from the local economic development agency. Of the remaining 124,600 jobs, the Department of Trade and Economic Development claims to have worked with firms that created 18,199 (14.6 percent) of the nonaerospace employment gain. An analysis by the Washington Research Council suggests that 89 percent of the state's employment growth in 1986 could be accounted for by national growth trends; only 11 percent could have been the result of economic development efforts.

The problem with interpreting impact data is that we have no way of knowing how many of the jobs and investment gains would have occurred in the absence of the state's economic development programs. Nor do we know how many jobs would have been created if certain development activities were dropped, or if some or all of the programs were expanded. In theoretical terms, joint-production efforts by a number of entities—including development agencies, private-sector service providers, and the expanding or moving firm itself—result in local employment gains. Separating out the contributions of individual agencies or programs is very difficult.

Another problem with interpreting such data is that there may be a time lag between costs and benefits. In all three Pacific Northwest states, economic development has received increased emphasis in recent years. Governor Gardner's election campaign focused on economic development, and the reorganization and expanded funding of those activities were an early hallmark of his administration. That development model is now being replicated in both Oregon and Idaho, with Governors Goldschmidt and Andrus seeking to match Gardner's success. When programs are in the process of expanding, there may be a considerable lag between expenditures and results. Likewise, when programs contract or end, some of their benefits may continue to appear for a time thereafter. Only when programs are in a steady state can we expect to observe their impacts contemporaneously.

The economic developers themselves, when pressed for evidence of the efficacy of their programs, talk more about capacity building, community outreach, and the size of contributions from local businesses than the number of jobs created or investments made as a result of their programs. Don Comstock, the former executive director of the Pacific County EDC and president of the Washington Association for Community Economic Development, states that "economic development is a process, not a product." In effect, the development professionals see their programs in terms of the scale of the processes they employ in their day-to-day activities, rather than in terms of the economic consequences of those processes. A cynical and skeptical observer might, in fact, see attempts to ensure sufficient votes to approve the next annual appropriation as compatible with this view of efficacy.

A more sympathetic view is that capacity building and community outreach are part of the economic development product. A community is not quite the same community in a political and social sense after an economic development organization has been established. Scholars of Third World development efforts have noted the same phenomenon. The eminent economist Charles Kindleberger and coauthor Bruce Herrick, for example, begin their textbook *Economic Development* by stating that "Economic development is generally defined to include improvements in material welfare. . . and the correspondingly greater participation of broadly based groups in making decisions about the directions, economic and otherwise, in which they should move to improve their welfare." This same impact of opening up the economic decision-making process to new actors is characteristic of economic development efforts in Washington today. How well economic developers accomplish this capacity building task is a crucial aspect of their efficacy.

The problem of assessing the effectiveness of economic development efforts is both exacting and critical as the industry grows and changes its focus. When a state government allocates more than $21 million per biennium to its lead economic development agency and millions more to other bureaus with development responsibilities, the evaluation of the impacts of their programs is surely justified. The practitioners, however, are not producing clear measures of effectiveness. Legislators, city councils, and business leaders throughout the state make resource allocation decisions each year—usually allocating more resources to economic development programs—without a clear measure of the success of past endeavors. The same decision makers who approve the increased budgets should continue to monitor these programs and should certainly insist on improved measures of the efficacy of economic development efforts.

Worth Reading

Job Creation in America: How Our Smallest Companies Put the Most People to Work
by David L. Birch, The Free Press, New York, 1987, 244 pages, $22.95.

Small is Beautiful: Manufacturing, Small Business and Oregon's Economy
by Joseph Cortright, Oregon Joint Legislative Committee on Trade and Economic Development, Salem, OR 97310, January 19, 1988, 28 pages, no charge.

"The Big Role of Small Businesses in Employment Growth"
by Susan Kavanaugh and Jennie Piott, LMI Review, Washington State Security Department, KG-11, Olympia, WA 98504-5311, January 1986, pages 2-6, no charge.

These three pieces highlight the job-creating ability of small businesses. By tracking individual firms over time, Birch and his regional emulators have shown that very small firms are responsible for most of the net job growth in the 1980s. Because of their policy significance and the quality of the evidence offered, these analyses are becoming important intellectual underpinnings for economic development efforts.

This line of research was initiated by MIT Professor David Birch, who has assembled a database of 6 million business establishments. Using this unique database, Birch has analyzed the births, deaths, expansions, contractions, and migrations of businesses over time. He states that the births and expansions of quite small business establishments are responsible for most of the job growth in the country: companies with fewer than 20 employees create 98 percent of net new jobs. Furthermore, Birch has shown that there is an enormous flow of firm births, expansions, contractions, and deaths lying behind the net change statistics. From 1981 to 1985, employment at firms in Birch's database expanded from 12.1 million to 13.2 million, but within that net expansion, 5.7 million jobs were created and 4.6 million were destroyed. Birch calls this turbulent dynamic process the "economic thundercloud."

Birch concludes with his prescription for economic development: a high-quality environment for expanding firms, created by investing in education, labor force training, government, telecommunications, and quality-of-life factors. This prescription has been taken to heart by public officials and editorialists around the country. Emory Bundy, in *Seattle Business* (March 1988), praises the new emphasis on helping home-grown small businesses and enhancing quality-of-life elements in recent development plans from the governor, King County, and the local economic development council.

The Washington and Oregon papers are to various degrees spin-offs of Birch's work. The Cortright paper is a methodological clone, created from a database that was compiled by several Oregon agencies with federal funding. The author finds that, from 1985 to 1986, firms with fewer than 20 employees account for 40 percent of all new manufacturing jobs, whereas firms with more than 250 employees recorded a net job loss. Like Birch, Cortright finds evidence of tremendous turmoil underneath the net change figures: "We are continually re-inventing the Oregon manufacturing sector. . . . On average one in every five Oregon manufacturing jobs is created or destroyed each year."

In the policy implications section, Cortright jumps squarely on the small business bandwagon: "Oregon can achieve most by aiding smaller businesses and minimizing—where possible—the decline of existing firms." He goes on to note, however, the large number of small firms responsible for the net expansion of employment, the difficulty of identifying (out of the great mass of small businesses) those firms with significant growth opportunities, and the challenge of designing public policy therapy that will help firms expand. While lending his support to small business assistance efforts, Cortright's major contribution in the policy section of the paper may be his forthright recognition of the difficulties involved.

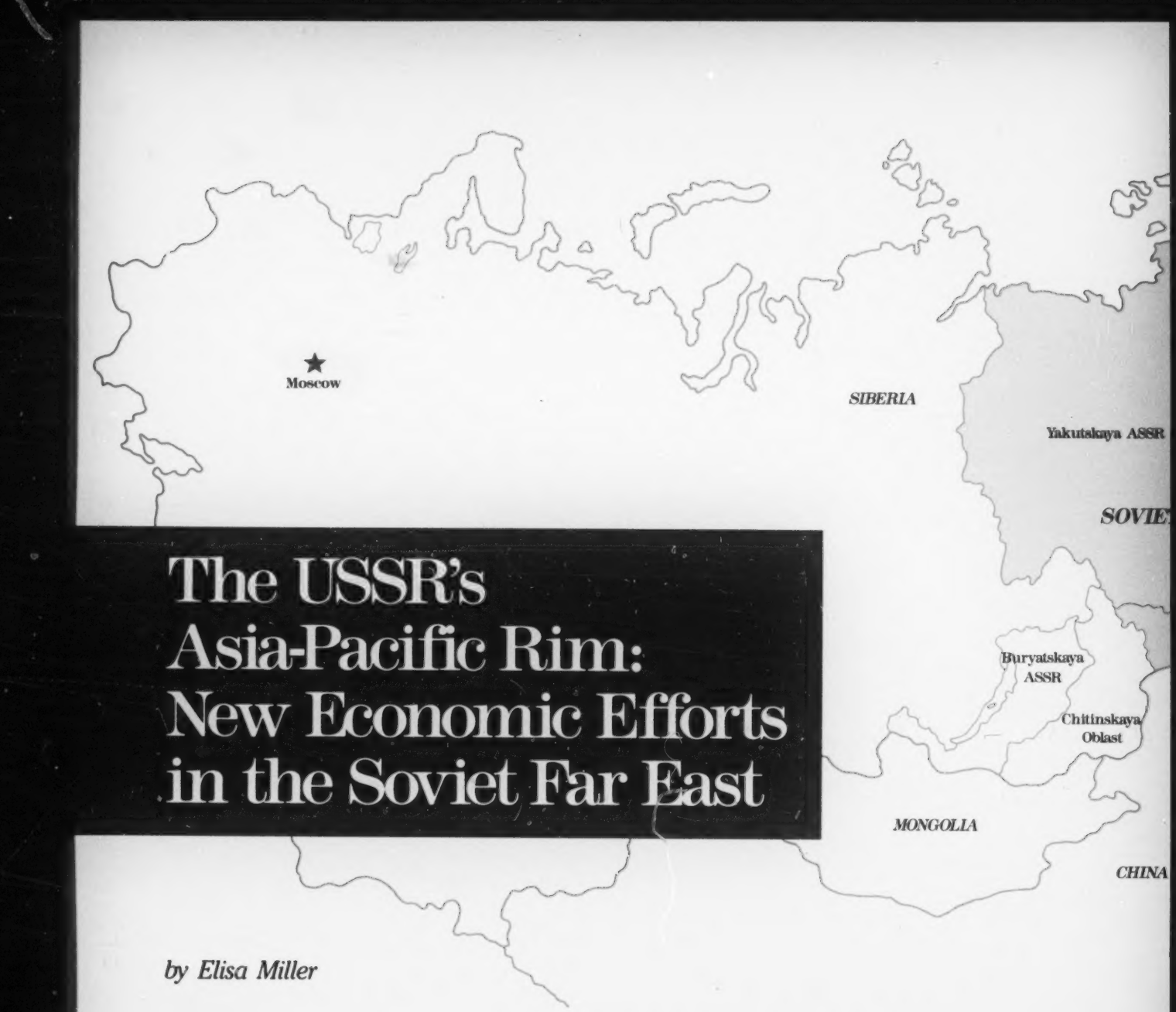
The Kavanaugh-Piott article cites data on Washington firms extracted from the federal Small Business Data Base, as well as data on covered employment from the Washington Employment Security Department. These data show that, from 1982 to 1984, firms with fewer than 100 employees had a positive employment growth rate in every major employment division except mining, whereas firms with 100 or more employees had negative growth rates in every division except that which includes finance, insurance, and real estate and services. Furthermore, between 1976 and 1982, the state economy not only grew faster than that of the nation, but did so through a more rapid expansion of employment in small businesses. Immigration and emigration had little to do with these patterns of employment change; the dramatic expansion within a small minority of businesses was responsible for much of the growth. Kavanaugh and Piott conclude with descriptions of the state's various programs, which are aimed at providing sources of trained workers and helping small businesses find capital sources and obtain facilities and services.

All of the authors have assembled impressive evidence on the relative contribution to job growth of business establishments of various sizes. They leap quickly to a set of policy prescriptions, however, with little appreciation of the limits of their empirical evidence or the challenges inherent in providing effective assistance to expanding small businesses. Cortright points out the difficulties involved in providing such assistance; his warnings are good advice for the economic development community. Expanding businesses may not require any public policy intervention. The fact that small businesses are creating jobs does not automatically suggest that they could be better at creating jobs if the public sector provided a variety of assistance programs.

Furthermore, it is not at all obvious that the success of small businesses in creating jobs in the 1980s will be followed by similar patterns in the 1990s. Small businesses are efficient in certain undertakings; larger enterprises are more efficient in others. The factors that favor the growth of small or large firms change constantly over time, and so will the distribution of employment between small and large firms.

Counting up the jobs created by businesses of various sizes also ignores the links among firms of different size. Boeing, an industrial giant, is a customer for many smaller enterprises. Forest products firms throughout the region have discovered how to cut costs by contracting with small businesses for logging, hauling, road construction, and even tasks within processing plants. In both examples, it is the success of the larger firm that determines the nature of opportunities for the smaller one, and counting the number of small businesses does not yield any clue to the underlying factors shaping the growth of the economy.

Birch and his regional disciples deserve praise for constructing these micro databases, which are teaching us a great deal about the dynamics of employment growth. At the same time, the limits of the authors' findings need to be recognized, especially by those responsible for designing and implementing business assistance programs.



The USSR's Asia-Pacific Rim: New Economic Efforts in the Soviet Far East

by Elisa Miller

The Soviet Far East is an economic region that is roughly 5,500 miles from Moscow. When it's four in the afternoon in the Soviet Far East, it's 9 A.M. in the nation's capital. If Yuri in Khabarovsk, for example, needs to talk to Ivan in Moscow, he only has an hour or two to reach him before Yuri's workday ends. This distance is especially critical in that Moscow still dictates the planning and investment for the region, and, no matter how rational or how well-meaning Moscow's Soviet Far East decisions might seem, the distance creates a gap.

The Soviet Far East is the country's Pacific face; its strength as a geographic region means a greater contribution to the national economy and a greater presence in the Asia-Pacific. The region is a treasure house of national wealth; it provides significant percentages of the USSR's fish and forest and mineral products. Up until now, however, rather than gaining in strength, the region has been falling behind. Inadequate attention and negligent policies have produced a drop in the region's economic indicators. Critical disproportions and imbalances have seriously strained the region's ability to develop its industrial strength. And, without a radical change in policy, the deterioration will continue and the region will languish.

In essence, the issues are those of planning policy: the goals set for the region's economic functioning, for its industries, cannot be achieved without a new emphasis on balanced growth. Yet this type of essential strategy has been ignored. The task, then, is to replace the present approach, which focuses only on sectors of specialization, with a strategy that takes into account growth in the necessary infrastructure and supporting sectors.

When General Secretary Mikhail Gorbachev visited the Soviet Far East in the summer of 1986, he noted that the region

needed a special approach to stop its economic decline and turn it around. The Long-Term Program for the Development of the Soviet Far East, Buryatskaya ASSR, and Chitinskaya Oblast was approved by the Central Committee of the Communist party in the summer of 1987.

What is this program, and how will it affect the region's future growth and the direction of that growth? What will be the region's future role in the Asia-Pacific economy?

We went directly to the architect of the program: Pavel A. Minakir, the deputy director of the Institute of Economic Research, Far Eastern Branch, USSR Academy of Sciences in Khabarovsk. We asked him not only to describe the officially accepted program, but also to detail its strengths and its shortcomings and tell us how such a program can coexist with recent Soviet announcements on the decentralization of economic decision-making.

From Raw Materials to Production

Miller: What are the problems you're trying to address in the Soviet Far East?

Minakir: If our industries—fish, forest products, and mining—are to contribute to the national economy, we must overcome our stagnation in the exploration of new areas for resource development. We must change the raw-material orientation of our present industry, which produces material for other regions to process. We must advance to semi- and full-cycle processing of our own raw material base. We need to reverse our technological backwardness to compete in the international marketplace.

These are our goals for the region. To achieve them, we must face the fact that what we produce here in the region doesn't meet our needs in terms of machine products, metallurgy, fuel and electrical requirements, construction capability and materials, food products, and other consumer goods. Of course, the region cannot be self-sufficient in every respect, but the structure of these supporting industries can be reorganized to meet regional requirements. For instance, we have a good deal of machine and plant equipment, but that capacity has been geared toward the production of goods for delivery to other areas of the USSR. We've seen that deficits in construction capacity and materials severely inhibit the ability of this region to move forward in terms of new exploration and new plant capacity. We've seen that deficits in machinery and equipment hinder our ability to move to higher levels of technology.

We can't advance without a stable, productive labor force. Our labor shortages are severe and are aggravated by the region's chronically low standard of living. Higher wages don't really help if we don't have the housing or goods and services to complement those wages.

Miller: What measures are included in the long-term development program?

Minakir: The plan proposes more semi- and full-cycle manufacturing of the region's natural resources and further development of the region's ocean resources, including oil and gas exploration and fish hatcheries. The plan encompasses measures for the introduction of advanced technology so that the region's products can compete on the international market. And the plan proposes measures to strengthen the region's infrastructure: energy, transportation, and its construction base. Especially critical here is the revitalization of the construction industry, without which advances can't be made.

The Fundamentals of Balanced Growth

Miller: Would you explain the program's fundamental concept of balanced growth?

Minakir: Although the region has been developing its sectors of specialization—forestry, fisheries, and mining—it has neglected for years its supporting industries. The economic infrastructure, which includes fuels, electricity, transportation, and social services—housing and educational and health facilities—now must have priority, or the unbalanced growth will continue.

An expanding fishing industry, for example, requires an investment in land-based processing facilities. We now catch more fish than we can process. Increasing the volume and the diversity of fish products are goals of the industry, but they're not realistic without more land-based processing. And processing facilities are difficult to build because of deficits both in the construction industry and in construction materials and because of the lack of labor and machinery for the processing industry. These supporting sectors must now receive our attention. This is what we mean by balanced growth. Within a framework of interregional and international—both socialist and capitalist—specialization, we must give priority development to the region's supporting sectors. Only in this way can we lay the basis for the future growth of the region's fish, wood, and mining industries.

Miller: The program is a set of projects, a set of proposals, if you will. What commitments have you received to ensure that this program is more than just a set of promises?

Minakir: The program promises 198 billion rubles [approximately $300 billion at the official rate of exchange] to be invested in the region in the next 15 years. This is between two and two and one-half times more than the amount that has been allocated in the last 15 years. This is evidence of Moscow's commitment to the region.

With this investment, we expect to de-

velop our supporting sectors and bring some increase in growth to our sectors of specialization. We expect that the region will be better able to supply itself with needed materials, thereby reducing the losses that the national economy sustains in long-distance transportation costs and the deficits that the region suffers when promised materials don't arrive. We anticipate that we can cut delays in construction projects and decrease labor turnover and emigration by providing better social and cultural amenities and facilities.

The Market Opportunities

Miller: Are you seeking, or will you seek, outside investment?

Minakir: At the moment, the program doesn't focus on the role of foreign capital investment or make any special effort to attract long-term foreign capital. The 198 billion rubles will come primarily from central sources. In my opinion, there are advantages to foreign capital participation, which reduces the burden on central sources for investment funds. Foreign capital participation can speed up the pace at which project construction and realization might occur. Although I can't say, at this point, to what extent we would look positively toward foreign capital participation, it is my own opinion that we should put forth special efforts to engage that capital. For cooperation to be successful, of course, we would have to implement a set of conditions, of guarantees, of rules and regulations for smooth functioning and for mutual economic benefits. In other words, an environment like the one that we are just beginning to put into place.

Miller: Will the introduction of economic reform, of increased autonomy to the firm and a decreased role for the central planner, help or hurt the long-term plan?

Minakir: It's hard to predict an outcome, but this is a most critical question. Without some mechanism of economic levers, it won't be possible to ensure that the autonomous decisions of the individual enterprise will converge with the long-term program's goals and objectives. At present, this mechanism does not exist, even though it is absolutely necessary and has been promised by the highest levels.

Of greatest concern to the region is the provision that economic stimulation take into account how our region differs from others—particularly from regions closer to Moscow. In the Soviet Far East, for example, infrastructure costs are much higher, costs to keep labor are higher, construction costs are higher. Profitability, when compared to a similar project elsewhere in our country, is harder to measure. The complete picture must be taken into account.

I'll give you an example. We produce wood products in this region, and one of that industry's by-products is chips. By using those wood chips, the region could produce chipboard, which, in turn, could be used to make furniture and other finished products. Such production facilities would employ the spouses of workers, increasing family income and activity and providing goods for export to hard-currency markets. Investment in a factory here, however, is often compared to investment in such a factory in other regions of the USSR, and, all too often, other regions win. What is lacking is a set of economic levers, of subsidies and price differentials, that can take into account the higher costs—and the higher payoffs—that investment in this region could bring.

Miller: What are the market opportunities for foreign investors in the Soviet Far East?

Minakir: Of special interest to us is the acquisition of machinery and equipment—acquisition either in the form of direct sales, co-production, or joint-venture production. We need machinery and equipment for the fishing and forest products industries and for the mechanization of certain activities in the construction industry. Equipment for sanding walls and floors is an example. We have already purchased some consumer goods and agricultural products on the international market.

These are our areas of interest insofar as acquisitions are concerned. From the point of view of products that we can sell on the international market—to both socialist and capitalist countries—I have in mind fish and fish products, wood and wood products, coal, certain types of machinery and equipment, tourism, and technical know-how in specific industries.

Still, and this is very important, it would be wrong to consider the Soviet Far East a ready market for Western equipment and technology or for Western industrial cooperation. Our enterprises are only just now gaining the right to have direct contact with foreign firms, only just now gaining the right to buy and sell directly or to engage in co-production or joint-venture arrangements. Despite the new, recently legislated set of rules, the majority of our enterprises still must have the approval of Moscow in order to conclude any contracts.

Cooperation within the Asia-Pacific

Miller: You've indicated some disappointment in the program. What's missing?

Minakir: For one thing, not enough attention has been paid to the region's role in the Asia-Pacific economic basin. We could use the economic potential of Asia-Pacific countries, including Canada and the United States, to solve some of the economic development problems of the Soviet Far East. Perhaps there could be a special approach in the Soviet Far East—more autonomy, for example—in relation to foreign economic ties. It might be possible to structure a system of foreign cooperation that would be favorable to the region, to the country, and to the foreign partners.

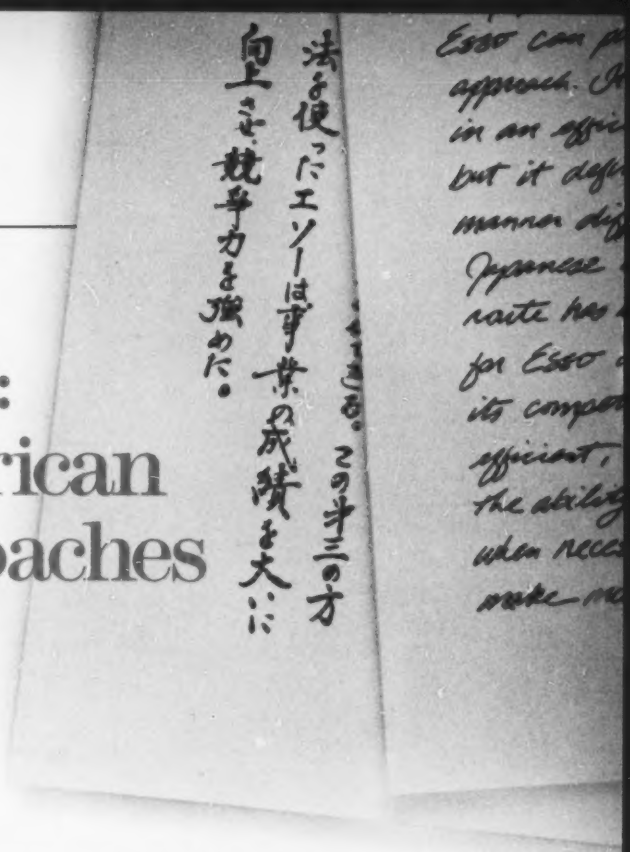
For another thing, not enough attention has been paid to a radical restructuring of the regional economy. We have managed to draw attention to the region's imbalances and deficits, but the problems of technological change and development, in order to put our industries at a level of international competitiveness, have not been adequately addressed. We are also missing the necessary mechanism to bring together the interests of the enterprise, operating under the new rules of economic reform, and the interests of the long-term regional plan.

Finally, there is concern that such a large-scale investment program, which calls for a lot of money, a very large territory, and a short period of time, just isn't feasible under present domestic conditions. This may be an area in which foreign cooperation can help.

But even if a system of direct contact with foreigners were securely in place, hard-currency requirements for purchases still require hard-currency sales on the part of our industries. In order to buy, we must sell. Even if we are talking about co-production or future joint ventures, the problem of hard-currency requirements exists.

In sum, we've got a lot of hard work ahead, not only insofar as accomplishing the Long-Term Program for the Development of the Soviet Far East, but also with respect to accomplishing mutually beneficial international cooperation for our territory. International cooperation, I feel, is within our interests. I invite a greater exchange between us.

Elisa Miller, a specialist in Soviet business and trade, recently completed a research exchange at the Institute of Economic Research in Khabarovsk in the Soviet Far East.



Corporate Strategies: Differences in American and Japanese Approaches

by Masamoto Yashiro

In spite of the increasing interdependence between the United States and Japan, the two countries have a wary relationship, which is often full of intense emotions, angry exchanges, and charges of insensitivity. Part of the problem is each country's lack of understanding regarding the economic, sociocultural, and political differences of the other. "Business as usual" in the United States is definitely not "business as usual" in Japan.

Masamoto Yashiro is the president of Esso, Sekiyu, an affiliate of the Exxon Corporation. In his 30-year career with the company, he has lived in Japan 20 years and in the United States for 10. Yashiro was the first participant in a seminar series, "Operating a Foreign Corporation in Japan," held in the Schools of Business Administration during the 1987-88 academic year.

Ask an American businessman what his prime corporate objective is and he will say that it's to make money. He may talk about associated objectives, but profit is the most important goal because it is a measure of how efficiently capital is being put to use.

If you ask a Japanese executive to name his main objective in business, he probably will not say profit. He will identify a number of objectives and profit will be only one of them. Japanese businessmen are more concerned with market share, with the growth rate of their companies, and with the interests of other parties: their banks, suppliers, marketers, employees, and unions. Profit is important but, compared to other objectives, it probably takes a secondary place. Most Americans believe Japanese businesses are very successful, but they are often successful only by the measures we use—Japanese measures.

Many people think, too, that Japanese industry is efficient. True, it is efficient in the manufacturing end of the business, where industry uses modern technology and has super-modern equipment. But once the product leaves the factory, it enters a most inefficient distribution system.

Consumers pay the price for the system. Gasoline, for example, is about $3.50 a gallon in Japan. Half of this cost is tax. If you eliminate the tax aspect of gasoline prices, the United States would have the cheapest gasoline and Japan the highest. Much of this difference is explained by Japan's cost of distribution. Japan has no oil product pipeline system, and the size of the country and the cost of land means it never will. Because of fire regulations, there are no self-service gasoline stations in Japan. Every service station has six or seven people working there, and Japanese service station operators make more money than attendants anywhere in the world. All of this adds to the cost of gasoline at the pump.

Such inefficiency has social costs, but people are happy that way. If you are faced with the option of making everything efficient and laying off employees or keeping the people employed even if it is inefficient, which would you choose? The Japanese choose the second option. The Japanese way has merit so long as there is no competition from outside countries. If competition is allowed to come in freely, the Japanese system is bound to collapse.

There are other differences between American and Japanese businesses. Typically, the capital structure of a Japanese corporation consists of 80 to 85 percent borrowed capital. Only 10 to 15 percent is shareholder equity. For most companies, the dividend yield to their market price is small. The price-to-earnings ratio of leading Japanese companies is about 80 to 1; for U.S. companies, it is between 15 and 20 to 1.

Since the Japanese corporation's capital structure consists of such a large percentage of borrowed money and the typical Japanese long-term, tax-deductible interest rate has been 5 percent or less, the true cost of money is only 2 to 3 percent. This cost represents 80 percent of the total capital employed. So the return requirements of Japanese corporations are primarily determined by the bank interest they must pay, and interest costs in Japan have been lower than those in the United States since the early 1980s. In U.S. companies, the debt-to-equity ratio is the reverse of that in Japan.

Chaz Johnson

The cost of capital, therefore, is much higher—close to 10 percent. The next time the United States and Japan have trade and commerce talks, there will be complaints that Japan's cost of capital is, comparatively, too low, which gives Japanese companies an unfair advantage.

Japanese companies that move their manufacturing plants to the United States don't have the same pressure to produce dividends that their American competitors have. They can afford to sell at a lower price in America, even if everything else is costing them the same. If Japanese shareholders expected the return on their investments to be equal to what they would get on a U.S. Treasury bond (assuming the exchange rate stays stable), the company would have to pay dividends like U.S. companies and prices would rise.

With U.S. stock, the return on shareholder investment is measured by capital appreciation and by dividends received. A good American company will probably return 15 percent per year to the shareholders, whereas a Japanese company will return only 0.5 percent. When stock prices go up substantially, as has happened during the last several years, the sale of Japanese stock yields a 15 to 20 percent shareholder profit. Since there is no tax on capital gains, most people just bank the small dividends while they wait for the stock to go up. Then they sell and get the profit.

About 75 percent of company stock is held by friendly suppliers, marketers, banks, insurance companies, and institutional shareholders. They are not investing for return reasons and won't sell even if the price of the stock goes through the roof. When they talk about a "large unrealized profit," they are speaking of this frozen stock. You can't really regard these Japanese companies as capitalist enterprises; in a sense, Japan is not a capitalist society!

The Japanese Oil Industry

Over the past several years, the Japanese government asked each oil company to reduce capacity, and the total reduction has amounted to 1 million barrels per day. One of Esso's affiliates was the first in Japan to totally shut down one refinery. Slowly the Japanese oil companies followed suit, although it is very difficult for Japanese businessmen to understand these economics. You don't throw anything out in Japan. Today's senior managers grew up before or during the war, so they tend to hold on to something—even if it costs them money.

In Japan, companies like Esso can pursue a unique approach. It can't do everything in an efficient "American" way, but it definitely operates in a manner different from the usual Japanese business. This third route has been very successful for Esso and has improved its competitive edge. By being efficient, the company has the ability to lower prices when necessary and still make money. Fifty-six percent of Esso's profit goes to the government as corporate income tax. We're proud of having contributed so much to society in the form of taxes and employment. And consumers are assured of a stable, continued supply of petroleum products at competitive prices. If all Japanese companies became more efficient, the competition would be much more fierce.

The Japanese oil industry has been regulated by the Petroleum Industry Law since 1962. When Japan joined the International Monetary Fund, we were barred from using foreign exchange allocations as a method of controlling imports. The government was very concerned that once the exchange control was removed the major foreign oil companies, such as Exxon, Mobil, and Shell, would try to expand their market share at the expense of Japanese companies. The stated objective of the law was to ensure a stable, low-cost supply of petroleum for Japan, but the *real* objective was to prevent the potential expansion of the major foreign oil companies. Refinery expansion became subject to government approval, prices were administered by the government, and the amount of gasoline that can be produced by each refinery has been controlled. If the supply-demand balance gets out of kilter, the government can step in to control production and prices.

In late 1986 the Ministry of International Trade and Industry (MITI) started sending messages to the oil industry stating its intention to form a subcommittee under the Petroleum Deliberation Council to look at deregulating the petroleum industry. The subcommittee met 10 times over a period of about eight months, and the discussions were not made public. The government had its own idea of how the industry should be deregulated. It talked to the subcommittee members individually, as well as collectively, and tried to get support for its ideas.

In the beginning, many on the subcommittee, especially the local Japanese oil companies, were opposed to deregulation. They liked being under the umbrella of government protection. Not surprisingly, the ones that wanted government protection were the ones that had not been profitable. As time went on, there was gradual movement toward the center, and in the end the government got nearly everything it wanted.

Is deregulation in Japan equivalent to liberalization? The Japanese government wants to look after the health of the oil industry, but it feels very strongly that due to pressures from foreign governments, including the United States, as well as from foreign oil companies that are not currently par-

ticipating in the Japanese market, the present form of regulation cannot survive long.

Ongoing Relationships

The role of government and business relationships in Japan is subtle and complex. In the early 1960s, for example, Japanese banking was reorganized, and foreign firms had difficulty borrowing money. By 1964 Esso was short of capital because it had no relationship with Japanese banks. The company brought in a young American, a graduate of Princeton. He was smart and aggressive and, with the assistance of one of Esso's joint-venture partners, he started developing business contacts with Japanese banks. A Japanese senior man from a joint-venture partner company who had friends in those banks was also brought in. Esso started getting more funds from the banks, but what it really wanted was stable equity capital, so the company applied for a capital increase. At that time, the application had to go to MITI, and then the Minister of Finance and the Bank of Japan had to approve it.

For this phase, we depended on a former government official who was hired by Esso in the early 1950s. He acted as a go-between. Naturally, the government was probably happy to see a former official working in a private company like Esso; it gave them important access to the company. The American head of the company thought that because this employee was formerly with the government, he could be effective in getting government approval. On the contrary, he just carried messages from the government telling Esso what it could and could not do. It took nearly two years before Esso realized that nothing was going to happen.

At this point, Esso changed tactics. They asked me to tap into the friendships and connections that I had in the government—associations that I'd started in middle school, high school, and the university. Lifelong relationships in Japan are important, and the capital increase was approved shortly thereafter.

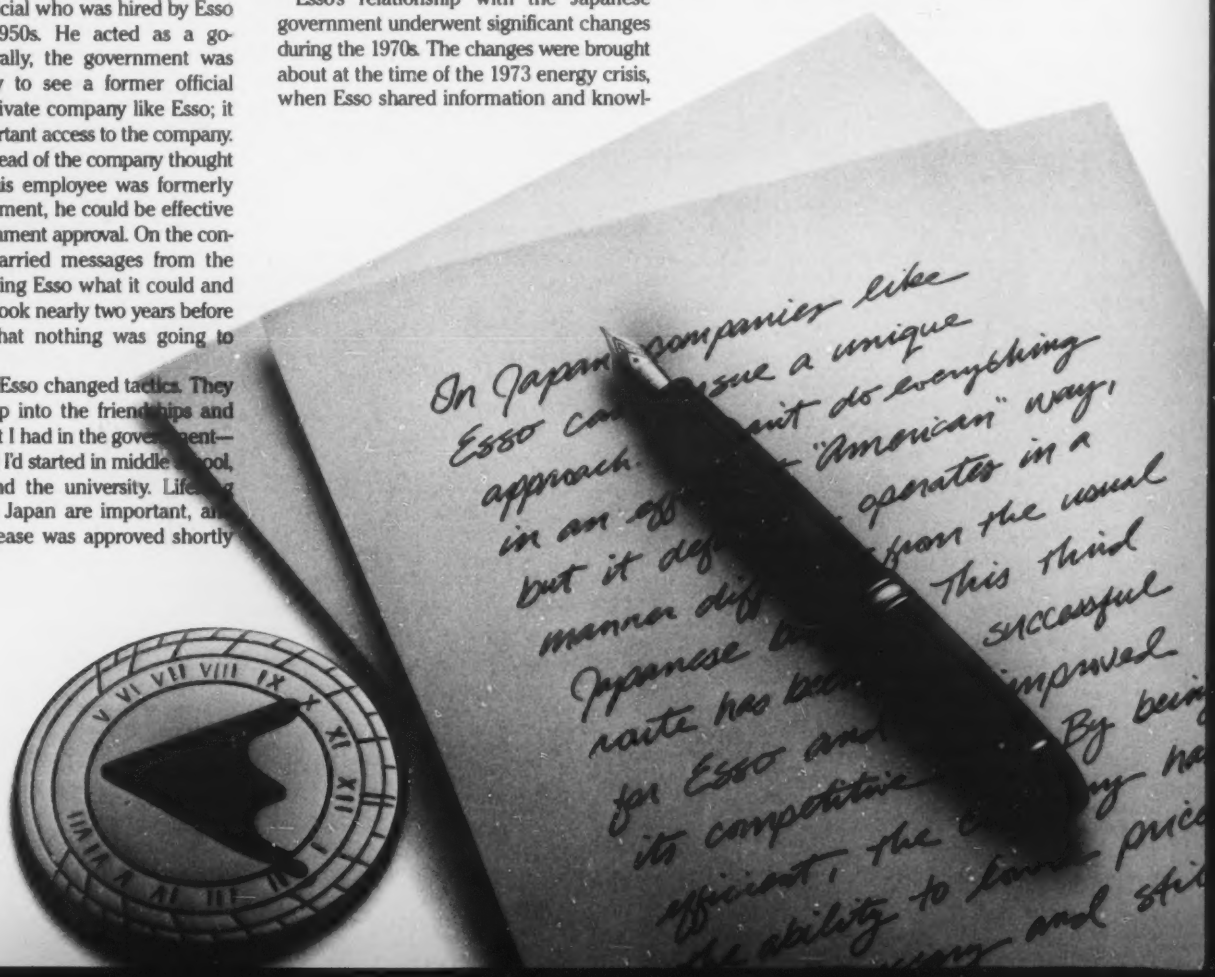
Political Strategies

How a foreign firm deals with those in the Japanese government—with politics—is important. A Japanese law concerning elected officials says that officeholders cannot receive political contributions from a corporation that is majority-owned by foreign capital. Esso went to see the government entity responsible for fund-raising to ask what was meant by "foreign capital control." The ministry responded by noting that although Esso is technically a Japanese corporation, there are foreign nationals on its board, so it will be treated like a foreign company. We don't make contributions to political parties, but the Petroleum Association of Japan does.

The type of lobbying done in Washington, D.C., may not be possible for a foreigner in Japan. American businessmen have a lot of friends in the U.S. government and politics, and they can use these contacts very effectively. In Japan, the important thing is the long-term relationship and the trust that is built up over many years of working together. That holds true if you are American or Japanese.

Esso's relationship with the Japanese government underwent significant changes during the 1970s. The changes were brought about at the time of the 1973 energy crisis, when Esso shared information and knowledge about the world energy situation in a timely and open manner with MITI, which did not have as good access to vital information as Exxon. We also tried to be as objective as possible, and as a result MITI started consulting with and involving us—more than Japanese companies—in their policy formulation. The government's trust in Esso culminated in my appointment as a member of the Petroleum Deliberation Council in 1974. I believe that I was the first chief executive from a 100 percent foreign-owned company on any government industrial policy council. Although we are one of the few companies that doesn't have former government officials onboard, the effective relationship that Esso has built over the years with the Japanese government has led to a most satisfactory business association.

While Japan and the United States remain poles apart on some issues, there are strong incentives to work out the differences. The high degree of interdependence between the two countries demands sensitivity and awareness on both sides. Failure in this area bodes ill for both nations, and indeed for the current global economic system.



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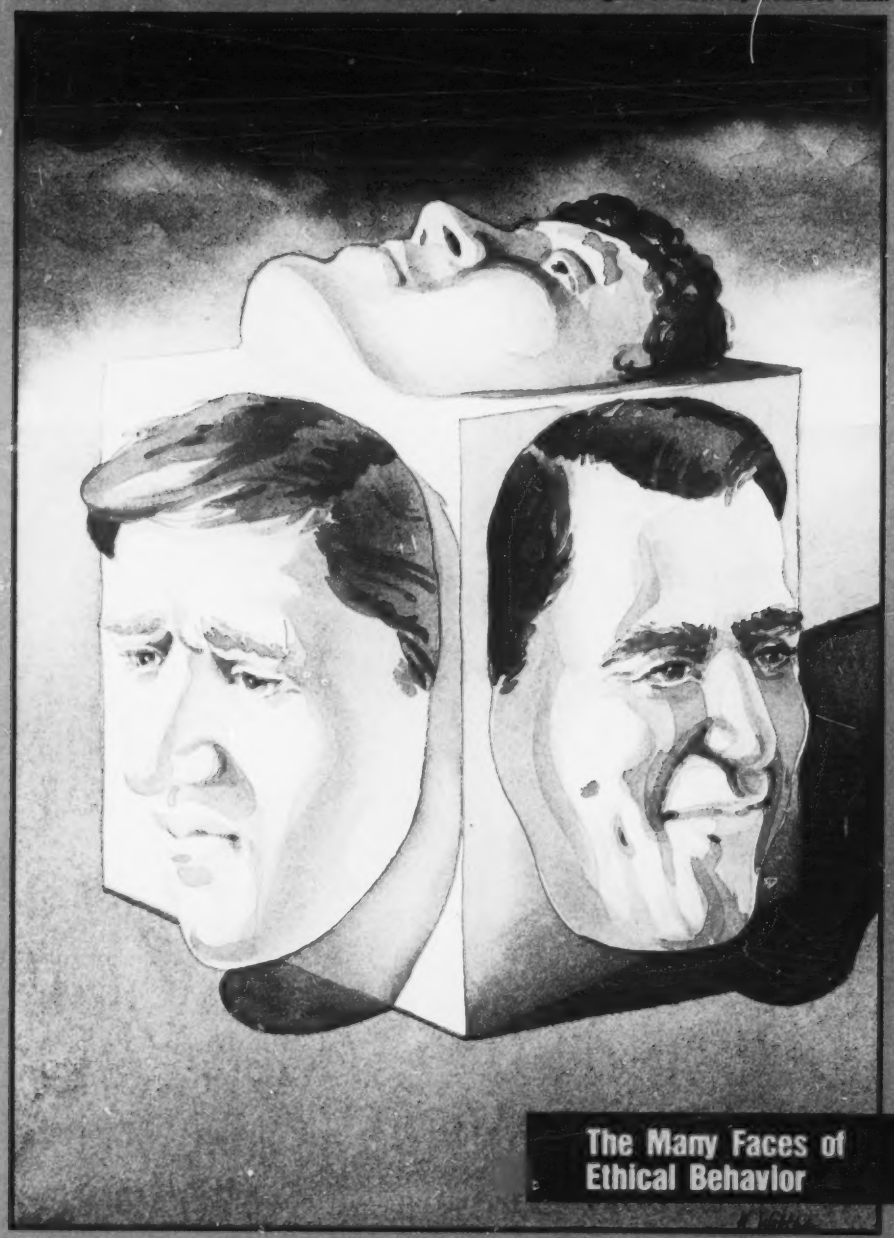

The Many Faces of Ethical Behavior

REGIONWATCH
- Gross State Product Indicators
- Printing and Publishing: Increasing Capacity, Decreasing Demand
- Where Do Pacific Northwesterners Spend Their Vacation Dollars?

The Interstate Rivalry for Business Opportunities

The Money Spent on Education: Can It Reap Economic Rewards?

Commentary

The Spirit of Ethics

The debate about business ethics is as hot today as it has ever been in recent years, and rightfully so. A focus on ethical behavior should be a fundamental concern for all businesses. In the day-to-day operation of a company, honesty and fairness are key to every single decision. We are or should be committed—instinctively—to high ethical standards.

In maintaining such standards, personal integrity is a quality of character that cannot be preserved by rules alone. Rules are

no substitute for a *spirit* of affirmation, decency, fidelity, and fairness. The ethical conduct of a corporation depends on the understanding and judgment of its staff. Fostering such a spirit is good for its own sake; this spirit also creates a fair, enjoyable place to work and a positive environment for the customer. A successful business organization, in the long term, is the product of its spirit of ethics.

Today it's fairly typical for customers to choose to do business with a firm because of the ethics and reputation of the company, as well as the quality of its product. Successful managers don't have to be told that ethical behavior—regarding the concerns of their employees, their services and products, and the community—should be their number one concern.

Even so, what is ethical to us is not always ethical to someone else, particularly to people in other cultures and in other countries. Business practices vary. For that reason, as we become more of an international community, we have to become increasingly aware of different ethical systems and focus more sharply on our own values, so that we can appreciate the values and ethics of our neighbors. But differences in values don't give us an excuse to avoid examining our own ethical standards. We need to understand the ethics of other cultures, yes, but we need to be true to our own values and live up to our sense of what's right.

For these reasons, there is plenty of room for public review and ongoing debate of the ethical situations that we experience while trying to run a business. This issue of *Pacific Northwest Executive* includes several articles and points of view on the current debate surrounding business ethics. As a means of clarifying our understanding of ethics, these articles are particularly well worth our time and attention.

In the long run, the most enduring thing a business possesses is its reputation. I'm sure you'll agree that companies that develop a reputation for high ethical standards are those that perform best in the market.

Luke Helms
President
Seafirst Bank

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Ethical Theory in Business Decision Making

by Thomas M. Jones

Business executives make ethical decisions almost every day. This may come as a shock to some, particularly those who view business as an exclusively economic enterprise. When ethical decisions are defined as "actions freely performed that significantly harm or benefit ourselves or others," it becomes clear that many business decisions have ethical implications. In the wake of insider trading scandals, defense contract kickbacks and overcharges, and bid-rigging trials, managers are being asked to give more attention to ethical matters.

How should a business executive make ethical decisions? One response to this question, which appears frequently in business ethics textbooks, is simply stated: apply ethical theory to the dilemma at hand. The theories that are applied most frequently to ethical problems in business are utilitarianism, egalitarianism, rights and categorical imperatives, and libertarianism.

The Greatest Good

Utilitarianism holds that the rightness or wrongness of a moral decision is determined solely in terms of its consequences and that moral agents—the people who make moral decisions—should attempt to achieve "the greatest good for the greatest number" of people. When a utilitarian is faced with a moral dilemma, he or she chooses the action that, of all the alternatives, produces the best consequences. In effect, utilitarianism calls for each person to apply a form of cost-benefit analysis to moral judgments. He or she seeks a solution that maximizes the net benefits (or minimizes the net costs) to all affected parties.

It is important to stress that a utilitarian is concerned with the effect of a decision on everyone involved—not just its impact on the moral agent. (The theory that one ought only to maximize his or her own benefit is called ethical egoism and is supported by very few moral philosophers.)

This ethical doctrine has two forms—act utilitarianism and rule utilitarianism. As the term implies, act utilitarianism focuses on the consequences of the specific decision at hand, without regard for how it fits into any pattern of decisions. Rule utilitarianism centers on adherence to general rules that, if widely followed, produce the greatest net benefits for everyone. A business executive who has adopted a rule utilitarian philosophy may be led to make a decision that, in the short term, does not maximize net benefits, but that fits into a pattern of rules judged to have utilitarian consequences. Dumping pollutants into a river, for example, could be justified in terms of rule utiliarianism because maximizing profits—by ignoring the social costs of pollution—is thought to promote efficient economic outcomes.

Equal Distribution

Egalitarianism is the notion that rights, duties, happiness, material goods, and so on ought to be distributed equally—or at least more equally than they currently are. Egalitarian theory owes its central tenets to Harvard philosopher John Rawls, the author of *A Theory of Justice*. Rawls denies that the moral worth of a decision can be determined by the greatest good for the greatest number; sacrifices imposed on a few individuals cannot be justified by pointing to benefits enjoyed by many. In this sense, justice is paramount in Rawls's ethical theory.

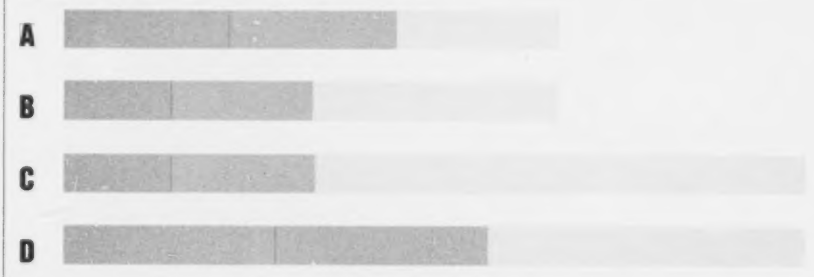
The egalitarian aspects of Rawls's system of justice are derived from a hypothetical situation called the original position—wherein people choose principles that determine the distributive aspects of their society. In this hypothetical situation, no one knows his or her position, social status, wealth, intelligence, physical strength, or propensity for risk; each person is enshrouded in a "veil of ignorance." Given this situation, rational people would choose an egalitarian society. They would reject a distributive system wherein benefits for the many were justified by the sacrifices of a few—a utilitarian outcome—because no one would know if he or she were among the disfavored few.

From the veil of ignorance, Rawls derives two principles:

- Each person should have rights equal to the most extensive basic liberties possible for the group. This principle, which applies to basic liberties such as political liberty, freedom of assembly and speech, freedom of thought, the right to hold personal property, and freedom from arbitrary arrest and seizure, is purely egalitarian in concept.
- Economic and social inequalities are acceptable only if they are to everyone's advantage, and they are attached to positions that are open to all. This second principle, which applies to the distribution of income and wealth, uses an egalitarian standard for comparing alternative results; wealth and income need not be equal, but inequalities must benefit everyone. For example, a high salary for an executive might be appropriate if he or she were able to operate the firm in

Utilitarianism and Egalitarianism

To illustrate the contrasts between utilitarianism and egalitarianism, consider a three-person universe. In each of the following four examples, wealth (as indicated by the length of the segments) has been distributed among the three people in a different manner.



Utilitarians would consider A and B equally just, for the total wealth is equal. C and D are also equally just. C and D, which demonstrate a greater total wealth, are more just than A and B.

Strict egalitarians would regard A as the only just distribution of the wealth, for each of the three people has an equal share of the total.

Rawlsian egalitarians would consider the divisions within A (equal shares) more just than those within B; A more just than C (the greater total wealth does not justify the sacrifice of the first person); and D (greater wealth for each person) more just than A or C.

a manner that increased the benefits to all corporate constitutents, including stockholders, customers, and employees.

Rights and Duties

Some theorists argue that ethical decisions ought to be made on the basis of "rights," usually defined as an individual's entitlement to something. Rights are closely related to duties: in fact, one person's rights are often described in terms of the duties that others have toward that person. A person's right to hold property, for example, is based on the duty of others to allow that person free use of the property.

Rights are frequently grouped into two categories: negative rights are characterized by the obligation of others not to interfere with their exercise; positive rights imply duties on the part of others to provide the holder with certain benefits. The right to privacy is a negative right; the right to an education is a positive right.

Legal rights are formally defined and protected by governmental authorities, albeit with varying degrees of enthusiasm. Moral rights, such as the right to earn a decent living, are said to exist merely because the possessor is a human being. These rights are not well defined and are not protected by any formal authority. How do we know that people have moral rights? On what ethical theory are moral rights based?

Immanuel Kant offered a moral principle he called the "categorical imperative," which maintains that everyone has a moral right to be "treated as a free person equal to everyone else." Further, each person has a corresponding duty to treat others in this way. Kant's categorical imperative posited two criteria for judging a moral decision:

- A person's reasons for acting must be ones that everyone could act on.
- A person's reasons for acting must also be ones that he or she would be willing to have others use if roles were reversed.

Kant later refined the categorical imperative: "Never treat people only as means, but always also as ends." In this regard, one individual should never use another as an instrument for advancing personal or organizational interests. Workers, for instance, should not be exploited simply to increase corporate profits or executive salaries. According to Kantian theory, adherence to the categorical imperative, in both of its forms, constitutes morally sound behavior.

The Historical Process of Wealth

Robert Nozick, in a 1974 book entitled *Anarchy, State and Utopia*, advances an ethical theory with its roots in libertarian tradition. He premises his entitlement theory on the claim that "a minimal state is the most extensive state that can be justified. Any state more extensive violates people's rights." According to Nozick, the state certainly should not be involved in redistributing wealth in a society—except in rare cases where it was obtained illegitimately—since this virtually always involves violating someone's rights. A person's holdings are justly held if the original acquisition of holdings was just and if subsequent transfers of the holdings were just. If these conditions are obeyed, *any* distribution of wealth—and its consequence—is morally acceptable.

A business executive who accepts the entitlement theory of libertarianism need concern himself or herself only with legitimate dealings with others and not with the consequences of those transactions. The ethical soundness of distributions of wealth depends only on the historical process by which the wealth was obtained, not its current pattern of distribution.

Which Ethical Theory Applies?

This outline of ethical theories has not addressed one point: which theory should be applied to which problems or, possibly, to all problems. Although ethical theorists have wrestled with the question of theory application—for centuries, in some cases—no clear-cut answer has emerged. No theory is philosophically dominant, and theories are often incompatible.

A business executive who seeks ethical truth is likely to find only a certainty about the process: ethical decision making, perhaps more than decision making in other realms of business, is difficult and ambiguous. Satisfaction may lie only in the *effort* to do the right thing.

Ethics in Management: An Example

Farmdale, Inc., is located in Spokane, with plants in Vancouver and Yakima. The chief executive officer, Robert Rooney, has to make a major administrative decision based on the fact that the company is losing money. Despite company cutbacks and production increases, Farmdale management has concluded that employee layoffs—in the form of a plant closure—must occur.

Rooney wants to make a decision that is sound from both an economic and an ethical point of view. To help him decide, he has had his staff draw up comparison data.

	VANCOUVER	YAKIMA
Annual Savings (or Loss Averted)	$2.5 million	$3.5 million
Projected Employee Layoff	800	1,000
Employees Likely to Get a New Job at the Same Pay	400	100
Employees Not Likely to Be Reemployed	400	900
Job Effect of Layoffs on Local Economy	100	500
Social Cost of Closure	$1.3 million	$2.5 million

Here, according to the various ethical theories, are Rooney's options.

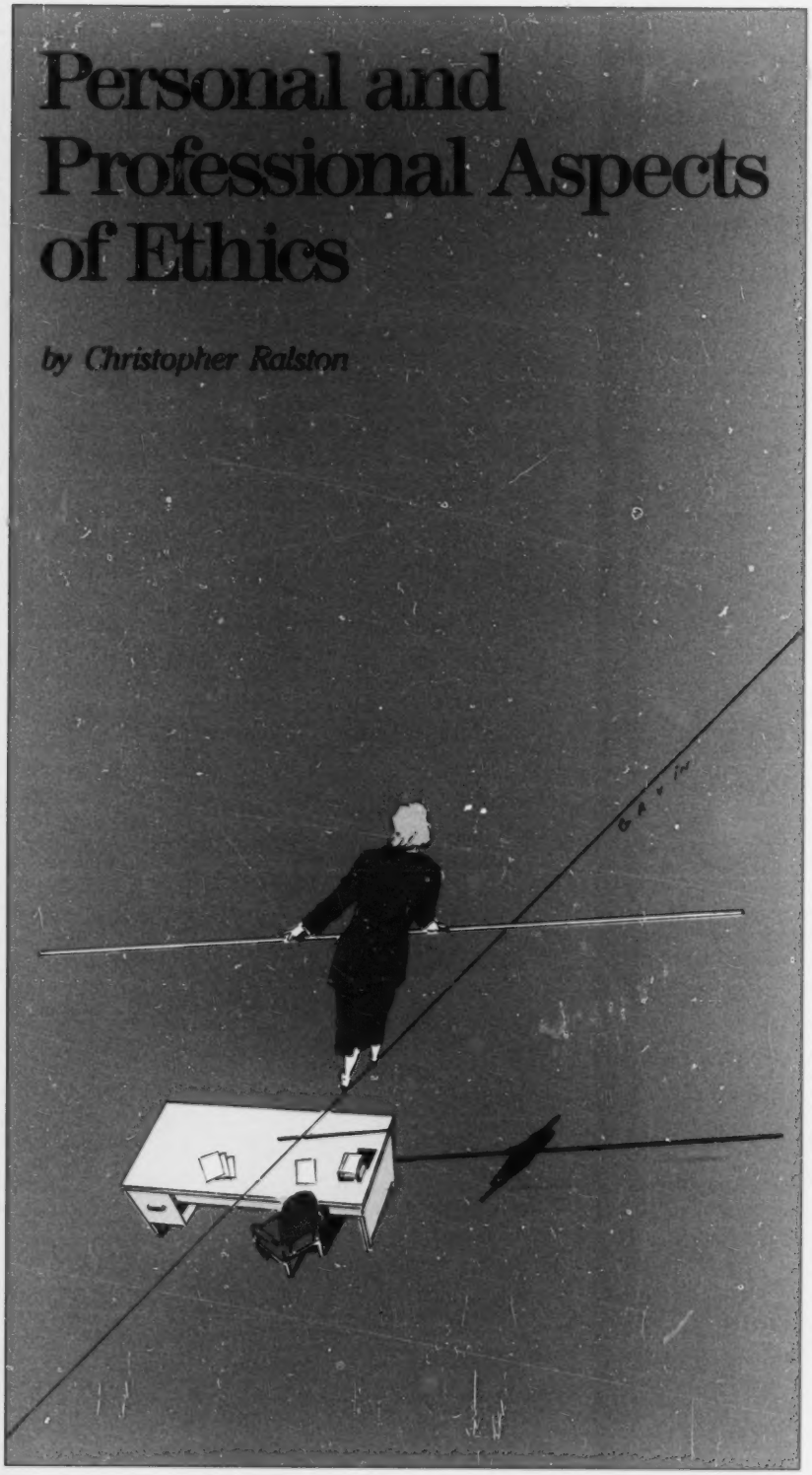
- **If he is a utilitarian, he will choose to close Vancouver. The net benefit to society (savings minus social costs) would be greatest.**
- **If he is an egalitarian, he will feel compelled to lay off equal numbers at each site.**
- **If he is a Kantian, he will not lay off anyone until new jobs at comparable pay have been found. Presumably, that is what the chief executive officer would want if the tables were turned.**
- **If he is a libertarian, he will choose to close Yakima. Assuming that no laws, contracts, or promises are broken, the savings would be greatest.**

Of course, Robert Rooney could make a purely economic decision and choose the Yakima option. If someone questioned his ethical criteria, he could always argue that basing all decisions on economic criteria is a way of acting efficiently in society—and that's what ethics is all about. This form of economic decision making is an example of rule utilitarianism.

Thomas M. Jones is an associate professor of organization and environment at the University of Washington Schools of Business Administration. His academic specialties are business ethics, corporate social responsibility, and corporate governance.

Personal and Professional Aspects of Ethics

by Christopher Ralston



Patricia Haroldson works as a customer representative for the Tacoma office of a national computer consulting firm. The client information that she incorporates into her designs of computer systems is often confidential, and Haroldson is acutely aware of the sensitive nature of this privileged information and of her company's emphasis on trust between consultants and clients.

A short time ago, Haroldson discovered that a casual friend from her university days, Scott James, had been hired to perform similar consulting work within the company. Haroldson welcomed James to the firm, but was puzzled by his hiring, for she knew that James had been convicted of a felony narcotics violation and had served a prison sentence. It became evident, after talking with James and her co-workers, that the Tacoma office managers knew nothing of James's conviction record. Although Haroldson and James hadn't actually discussed his past, both knew that he wouldn't have been hired as a consultant if he had factually reported his history. Haroldson is mindful that if the information were made public, James would lose his job and, depending on the circumstances of the disclosure, the company could be embarrassed and its reputation damaged.

Haroldson hasn't divulged her knowledge of James's past, but the question of her responsibilities to her employer, her co-workers, and the company's clients has troubled her. There is some danger that a client or future client could be aware of James's record. Would it be ethical for her to reveal Scott James's history to her employer in the hope of protecting the company and her co-workers from the consequences of a future disclosure? Is Haroldson's responsibility to her employer or to an acquaintance?

The Ethical Side of Corporate Decision Making

The dilemma that Haroldson faces is only one example of the type of ethical challenge that most of us face from time to time. Business managers and administrators are commonly confronted with such situations, and theirs is the task of applying a consistent set of decision-making criteria to problems that may involve employees, customers, the community, or the environment.

Corporate concern with ethical issues has grown in recent years, fueled by public con-

cern about the effects of business decisions on the community outside the company's headquarters or plant. Businesses have also been motivated by economic rivalry to address issues of social and moral conduct. In a world of increasing competition, both domestic and international, it has become apparent that being significantly out of step with society's expectations can be costly. The furor over Nestlé's marketing of infant formula in Third World countries eventually cost the Swiss company an estimated $40 million. It can be more cost-effective to play by the rules than to be forced into a game of ethical catch-up.

Ethics, in their most basic sense, are a set of guidelines by which the rightness of an action or a decision is measured. Personal ethics develop over time, and those private standards are the result of a variety of influences—parental guidance, religious background, and general societal conditioning. Although both personal and business ethics are strongly influenced by each individual's upbringing, there are several ethical systems or schools of thought. The most familiar philosophies are utilitarianism and egalitarianism, but each ethical system may yield a different decision, depending on the circumstances under which it is applied. There are no established rules to help people choose an ethical philosophy.

From a purely utilitarian point of view, the resolution of Patricia Haroldson's situation would be determined by the consequences her employer would face if the details of Scott James's criminal record were made public. If an untimely disclosure of James's past resulted in a loss of business, damage to the company's reputation, and, most important, the possibility of people losing their jobs, then it is Haroldson's obligation to tell her employer what she knows and minimize the negative consequences. Under the egalitarian ethical system, Haroldson would look for a solution that would yield the most equitable results, given the circumstances.

Codes of Conduct

Conveying the ethical standards of a company to a large number of employees and then ensuring that those models are adhered to is a formidable task. Large businesses commonly have written codes of conduct that address issues such as personal investment, appropriate behavior on the job, and acceptable political activity. These codes are distributed to employees at the beginning of their term of employment, and the firm generally makes an effort to keep the regulations fresh in the employees' minds. These codes of conduct and the policies used to implement and enforce them may be based on any number of ethical systems; the use of a code of conduct is, in itself, an example of the rule utilitarian approach to ethical decision making. Under this system, the widespread adoption of a set of general rules, such as a code of conduct, will produce the largest net benefits for everyone involved.

First Interstate Bank of Washington conveys its organizational values, in part, through its "Bankwire Video" series. According to A. H. "Bud" Towsey, the bank's executive vice president of internal services, the videos address issues of importance to employees and recognize outstanding personnel for their achievements and commitment to the bank. The programs offer a regular means for the bank to reinforce what it considers significant. First Interstate also conducts regular opinion surveys to learn more about employee concerns. The results of the surveys are published and distributed to staff members. The Boeing Company, to ensure that all the people and companies it has dealings with are aware of its code of conduct, distributes its regulations to customers and suppliers, as well as employees.

Two Pacific Northwest companies have taken additional steps to convey and institutionalize their ethical standards. The Weyerhaeuser Company established a Business Conduct Committee in 1977 to provide the "guidance. . . to satisfy Weyerhaeuser's requirements for ethical business conduct." The committee's 10 management staff members represent the numerous areas of the company and serve on a rotating basis. Barbara Brower, a committee member, states that the BCC is "not a police force; it's a company resource." The BCC has directed the production of a series of videotaped vignettes designed to train management staff in ethical decision making in areas such as conflict of interest. The committee has also worked closely with the Ethics Resource Center, a Washington, D.C.-based group that promotes ethical behavior in business.

To ensure the consistent interpretation of its published ethical standards and codes of conduct and to avoid problems before they occur, Boeing has established a business ethics advisor position in each of its divisions. The advisor is well versed in the company's policy standards and has the ability to judge whether a particular situation, action, or decision is likely to result in a dilemma for the company.

In 1986 Boeing established the office of business practices, directed by William Lambert. The office provides a means of direct communication—from the rank and file to top executives—that is free of the bias of line management. Lambert stresses that his position as director is not one of ombudsman or employee advocate. He views his role as that of "a member of management who works to provide an unbiased view of a situation and facilitate a solution."

Contributions to Society

Ethical business considerations extend beyond simply adhering to practices that don't violate laws or generally accepted standards of conduct. Business exists as an integral part of our society and therefore has an ethical obligation to contribute to society—a duty that extends beyond economic capacity or a role as a provider of employment.

Consider, for example, the ethical role of commercial loan officers, who, on a regular basis, evaluate the loan applications of businesses located in economically weak or underdeveloped areas, such as Seattle's Rainier Valley or northeast Portland. Each loan application, regardless of its point of

origin, must be judged by the same criteria. For businesses in the disadvantaged neighborhoods, however, there is another obstacle: the banks will almost assuredly reject the loan. This circumstance leads to what some critics have called "redlining"—the practice of excluding certain areas from the economic benefits of a bank, a custom that perpetuates the weak economies of underdeveloped districts.

The criteria by which loan applications are judged is generally established by bank

management and is not under the control of individual loan officers, who are nonetheless confronted by the reality of rejecting loan applications. To counter accusations of redlining and to uphold what corporate managers view as their ethical responsibility, lending institutions such as First Interstate Bank of Washington contribute to economically weak areas through other means. According to First Interstate's Towsey, the bank will lend to anyone meeting traditional lending requirements. In addition, it contributes to "those areas that are marginally healthy through the use of gifts and grants that serve to strengthen the infrastructure of the communities."

Such action on the part of First Interstate and other banks is governed by a mixture of utilitarian and egalitarian ethical systems. Banks assist the disadvantaged sectors of the population through gifts and grants because to do otherwise could yield consequences far more costly. Public charges of redlining or discrimination could pressure legislatures into enacting measures to force banks into providing preferential treatment to loan applicants from certain disadvantaged areas. This is not to say that those people who make up the banks' employees and directors are motivated only by a desire to avoid negative consequences. Most people possess a desire to see a more or less equal distribution of the goods of society, which is an egalitarian outlook. If corporate policy is a reflection of those involved with a bank or company, it can be assumed that these policies are, in part, based on the egalitarian approach to ethical decision making.

The public accounting industry's role in society is similarly unique. Accounting firms are the only independent third parties that regularly assess the financial status of their clients. While its primary responsibility is to its client, the accounting firm is in a sense also responsible to the client's shareholders, creditors, and potential creditors. Jim Davey, the managing partner of the Seattle office of Arthur Young and Co., says, "This presents situations in which the accounting firm must take a position that is not necessarily the best one, but meets the needs of the client and is acceptable from the point of view of the accounting profession."

At present, individual auditors must report a client's illegal or improper activity to the accounting firm's management, yet no one has the responsibility to make the information known to outside parties. Recent public and professional debate has focused on this issue and may result in the adoption of new standards that hold accounting firms liable for withholding information concerning improprieties. "This watchdog role is not now undertaken because no one is willing to fund such activity," explains Davey. "The decision is strongly influenced by cost-benefit analysis: when someone is willing to pay for it, the role will be adopted."

The public accounting industry has adopted a rule utilitarian approach to ethical decision making by adhering to the regulations established by the Securities and Exchange Commission and the Financial Accounting Standards Board. Firms may not maximize net benefits by doing so, yet they are conforming to a system that has acceptable, positive utilitarian consequences in the long run.

The Company and the Community

One of the more complex ethical issues that businesses deal with is that of their responsibilities to a variety of constituencies. In very different ways, business decisions affect employees, stockholders, creditors, suppliers, and the community in which the company is located. Each company has a responsibility to its creditors and shareholders to maintain profits, yet the closure of an unprofitable branch plant, for example, will result in certain loss of employment and economic hardship for the surrounding community. Most published statements regarding a company's ethical standards, by the way, do not commonly address the possibility of closure.

When confronted by this type of situation, companies typically fall back on the original purpose of the venture—to make a profit—and announce the decision in light of that point of view. This is, in a sense, a utilitarian approach. "The purpose of the company, among others, is to make a profit," says Lee Lathrop, Boeing's corporate manager of internal communication. "Some decisions may appear unfair, but they must be made for the long-run good of everyone—customers, employees, suppliers, and shareholders."

While the profit motive is paramount in the ethical decision-making process of most companies, it need not entirely overwhelm other considerations. A case in point is a Boeing plant in Tennessee—an operation that constituted much of the local economic base. The facility, which was almost entirely dependent on a Department of Energy contract, faced closure when that contract was withdrawn. In recognition of the importance of the plant to the community, Boeing chose to reorganize it, retrain workers, and shift work from other areas to the Tennessee facility. "Boeing will not subsidize an activity at the expense of the shareholders," Lambert states, "nor will it abandon the community." In this situation, the negative consequences of a short-term loss of profits was outweighed by the economic devastation to the community and, perhaps, by the public relations tension that would result.

Making the Decision

While it is clear that many of the ethical systems and the decision-making processes followed by the companies and people interviewed for this article can be defined as utilitarian, it is also clear that most business people are simply not aware of formal ethical systems and do not apply them as such. Business ethics, as one person commented, are a reflection of personal ethics. People aren't aware of ethical systems in their day-to-day decision making, so it's not surprising that their business decisions are made independent of a discrete system.

While unethical behavior does exist in business, most corporate executives and managers are very vocal in their belief that business people make a conscious effort to be as ethical as possible and live up to their responsibilities. A. H. Towsey states, "I believe that those in business are generally of a high caliber and are very ethical people. I never wanted to compromise my values by being in business, and I've never had to. I hope it's the same elsewhere."

Christopher Ralston is a 1988 MBA graduate of the University of Washington. He conducted his research for this article with assistance from the Alpha Kappa Psi professional business fraternity.

REGION WATCH

Economic Developments in the Pacific Northwest

As the current economic expansion nears the completion of a historic sixth straight year of real growth, more signs of maturity within the business cycle are appearing. Unemployment traditionally edges downward as a business cycle nears its end; in mid-year, the national unemployment rate hovered around 5.3 percent, the lowest level for that measure since 1974. Unemployment rates in the Pacific Northwest were higher than that: 6.5 percent in Washington as of April, 6.1 percent in Oregon, and 7.2 percent in Idaho. Other indicators of the mature, or peaking, phase of the cycle include increases in capacity utilization in May, and, in the month of July, prime interest rate increases by banks and credit-tightening moves by the Federal Reserve Board. This is not to say that a recession is right around the corner or right after the upcoming election, but the signals that the economy is providing suggest that the next recession may be a year or so away.

Signs of maturity

The region's major economic sectors continue to perform quite well. Boeing is on its way to yet another record sales year. The strong worldwide demand for commercial aircraft and increasing concern about replacing aging fleets add up to more orders for all Boeing models. Aluminum prices remain high, and the Midwest drought has led to an increase in prices for many agricultural commodities. Paper mills are running at capacity, and lumber mills are facing higher interest rates, which may dampen the demand for their products in the housing sector. The devalued dollar is providing new export opportunities for businesses in many sectors of the economy, and the traffic at regional ports is brisk in both imports and exports. As long as the national expansion continues, this region's economy should do well. Higher interest rates are the most immediate source of economic concern—the Pacific Northwest's lumber and wood products sector is quite sensitive to this variable.

Table 1: *Pacific Northwest Executive* Economic Forecast Panel

WASHINGTON

Cleve Anschell, *Economics Department*, Rainier National Bank

Clarence H. Barnes, *Dean*, School of Business Administration, Gonzaga University

Philip J. Bourque, *Professor*, Graduate School of Business, University of Washington

Susan Doolittle, *Economist*, Port of Seattle

Lynn Michaelis, *Chief Economist*, Weyerhaeuser Company

Chang Mook Sohn, *Chief Economist*, Economic and Revenue Forecast Counciul

Thomas F. Tatasz, *Economist*, First Interstate Bank of Washington

OREGON

William B. Conerly, *Vice President and Economist*, First Interstate Bank of Oregon

Ann Nolan Hanus, *State Economist*, Executive Department, State of Oregon

John W. Mitchell, *Senior Vice President and Economist*, U.S. Bank

Ham Nguyen, *Corporate Planning*, Portland General Electric

W. Ed Whitelaw, *Professor*, University of Oregon; *President*, ECO Northwest

IDAHO

Michael H. Ferguson, *Chief Economist*, Division of Financial Management, State of Idaho

Donald W. Holley, *Economist*, Ore-Ida Foods Inc.

Jack G. Peterson, *President and Chief Economist*, Idaho Mining Association

Don Reading, *Economist*, Ben Johnson Associates

Charles L. Skoro, *Associate Professor*, College of Business, Boise State University

The *Pacific Northwest Executive* forecast panel is composed of the region's leading economic forecasters (Table 1). The members of this panel, polled in late summer, foresee continued growth of the national and regional economies in the coming year. The panel's median forecasts call for a performance this year that is substantially better than that of 1987 (Table 2). Real GNP is estimated at 3.3 percent in 1988, a small improvement over the 2.9 percent expansion of 1987. The panel predicts, however, that growth will taper off as inflation increases in 1989. This prognosis is quite consistent with the capacity shortages and higher interest rates observed at the national level

Regional panel forecast

Table 2: Panel Forecasts
median annual percent changes

	REAL GROSS NATIONAL PRODUCT	IMPLICIT PRICE DEFLATOR
1987 actual	2.9	3.0
1988	3.3	3.5
1989	2.2	4.5

	NOMINAL PERSONAL INCOME	NON-AGRICULTURAL EMPLOYMENT	MANUFACTURING EMPLOYMENT
WASHINGTON			
1987 actual	4.9	3.9	3.8
1988	6.2	3.7	4.2
1989	6.2	2.4	2.0
OREGON			
1987 actual	5.0	3.4	3.3
1988	6.0	3.3	3.0
1989	6.1	2.0	1.5
IDAHO			
1987 actual	4.9	−0.2	2.5
1988	5.0	1.0	3.2
1989	5.1	1.2	3.0

in recent months.

At the regional level, the outlook is quite strong, despite the national forecast for a slower growth rate in 1989. Nominal personal income growth forecasts for all three Pacific Northwest states are higher for 1988 and 1989 than the actual record for 1987. The panel estimates that employment will increase throughout the region in both 1988 and 1989—even though the pace of that growth is forecast to be slower in 1989 than in 1988.

We also asked our forecast panel to comment on the probability of the acceptance of the United States-Canada Free Trade Agreement by both the U.S. Congress and the Canadian Parliament. Once the signing ceremonies were completed, the national legislative bodies faced the task of passing implementing legislation. The careful balance of regional and industry-specific tradeoffs embodied in the agreement thereby came under close scrutiny, and a heated debate emerged, particularly on the Canadian side. The issues are still unresolved as this issue of *Pacific Northwest Executive* goes to press. The forecast panel rates the chance of approval by both countries at 70 percent.

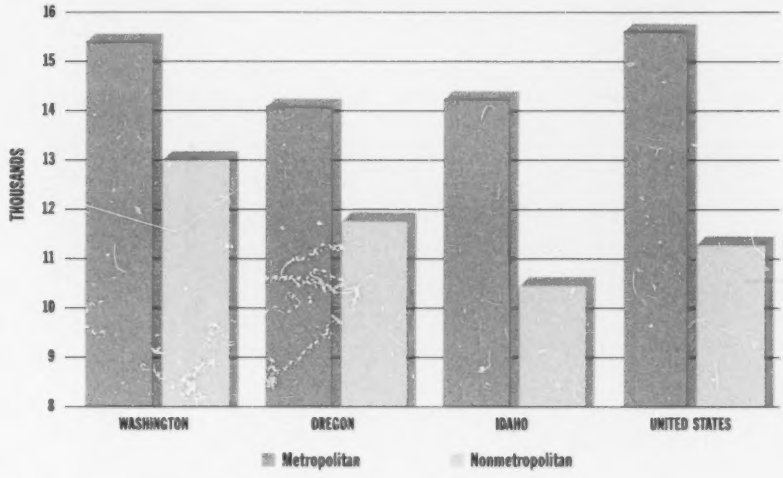
Impact of free trade

When asked to rate the agreement's probable impacts on U.S. firms doing business in the Pacific Northwest, the panel predicted generally favorable effects, but with some differences according to economic sector. The paper industry was the only area in which negative impacts were foreseen. The sectors likely to benefit most from this agreement include ports and other transportation enterprises, high-tech firms, some miscellaneous manufacturing firms, and financial services. The sectors most likely to see modestly positive impacts include agriculture, mining, energy, wood products, construction, and nonfinancial services.

Policy-makers and the public in the Pacific Northwest have heard a great deal of talk about urban-rural disparities in personal income in recent months. Inspired by the adjustments taking place in the agricultural, forest products, aluminum, and mining sectors, economists and journalists have been writing about "the other Washington," "the other Oregon," and "the other Idaho." Recently published per capita personal income data for metropolitan and nonmetropolitan counties in these states demonstrate the reality of this rhetoric about urban-rural income disparities: in 1986 personal income per capita was $2,392 lower in nonmetropolitan counties in Washington than in the metropolitan counties, $2,317 lower in Oregon, and $3,792 lower in Idaho (Figure 1). The articles that have appeared in area newspapers and the conferences at which the "other Pacific Northwest" issue has been discussed, however, have failed to note that the national metropolitan-nonmetropolitan disparity was $4,319, which is significantly larger than the inequality in any of the region's states.

The other Pacific Northwest

Figure 1: Personal Income Per Capita in Metropolitan and Nonmetropolitan Counties, 1986



The gap is real in the Pacific Northwest, and it's large enough for politicians to show some concern and to initiate further research to ascertain the effects of the disparities on state residents. Is the cost of living low enough in nonmetropolitan areas to offset the income gap? Is the incidence of poverty higher in nonmetropolitan areas? Are economic development programs doing anything to lessen the difference in per capita incomes? The gap is also large enough for business leaders to consider whether the lower labor and land costs associated with a nonmetropolitan location might be more advantageous than those of a metropolitan location—even considering the higher cost of transportation. It is also important, however, to keep the national average in mind when considering such issues; the urban-rural gap is just not as great in this region—particularly in Oregon and Washington—as it is nationwide.

With this issue, we introduce a new set of regional data on the indicator pages: Gross State Product (GSP). GSP is the state-level equivalent of GNP—a cumulation of all the income streams created in a state economy by the labor and property located within the state. The definition of Gross State Product, its major components, and selected data for the Pacific Northwest states are provided on page 12. It is our intent to publish these data in each October issue.

Gross state product

The industry-level GSP estimates are among the most significant additions to the regional database listed in the GSP data. Prior to the publication of these estimates, analysts relied on industry-level employment data for each state and national data on productivity to estimate the state-level output for specific industries. The availability of more accurate industry-level data should improve the modeling and forecasting efforts of regional economists.

For the Washington State economy, we are in the unique position of having four years of independently constructed estimates of Gross State Product that we can compare to U.S. Department of Commerce, Bureau of Economic Analysis (BEA) estimates. University of Washington Professor Philip Bourque and his research teams constructed input-output models for the state economy in 1963, 1967, 1972, and 1982. Those models contain GSP estimates based on detailed state survey data. This survey-

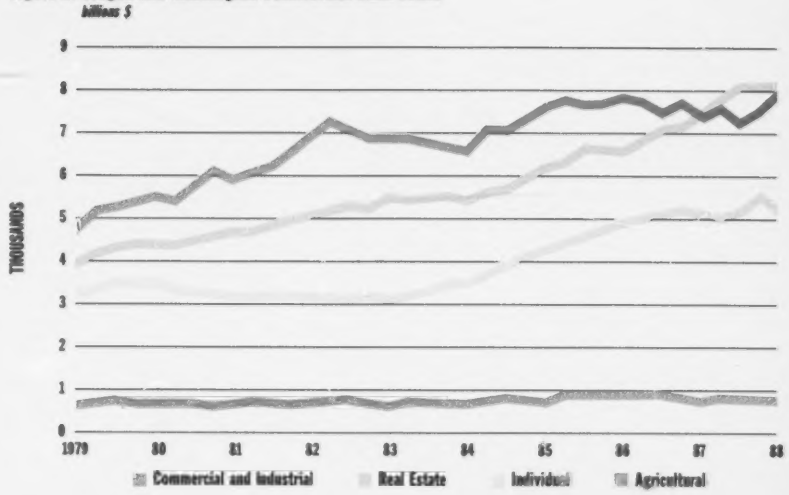
based approach is in some respects superior to the BEA's approach to Gross State Product estimation. The BEA relies heavily on state employee compensation data and national-level ratios of compensation to proprietors' income, indirect business taxes, and other capital charges to estimate these state-level components of GSP. The input-output models and the Bureau of Economic Analysis estimates are in fairly close agreement about total GSP, especially for the more recent years. The BEA estimates were 12 percent lower than the input-output estimates in 1963, 8 percent lower in 1967, 1 percent lower in 1972, and 3 percent higher in 1982. For Washington State, the BEA approach appears to be producing reasonably accurate Gross State Product estimates.

According to data from the Federal Reserve Bank in San Francisco (Figure 2), real estate loans now lead the loan portfolios of large commercial banks in Oregon and Washington. For the first time since 1979, the starting point of the *Pacific Northwest Executive*'s data collection, real estate loans overtook commercial and industrial loans in total value in the second quarter of 1987. Real estate loans remain the highest valued item in the commercial bank loan portfolio as of the first quarter of 1988.

Regional loan portfolios

Loans to individuals have grown much less rapidly than real estate loans, and the agricultural loan portfolio shows little net change during the nine-year period. The real estate loan phenomenon may be correlated with the construction booms in our downtowns. The Portland and Seattle areas have both experienced an explosion of new skyscrapers. If this construction boom is the reason for the portfolio shift, commercial and industrial loans may regain their traditional position of preeminence in the bank loan portfolio.

Figure 2: Oregon and Washington Commercial Bank Loans

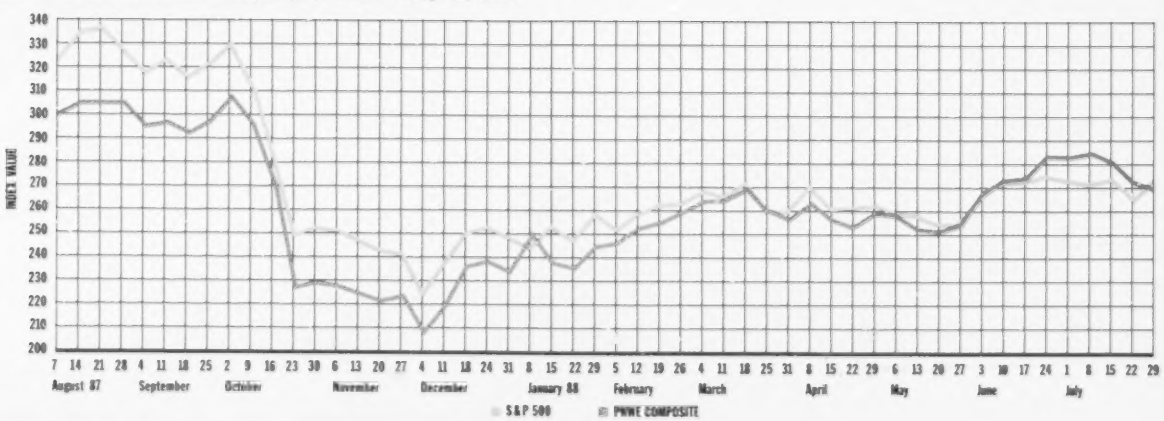


In our last issue, we commented on the increasing number of Japanese-owned firms in the state of Washington. A reader wrote to say that one of the large Japanese-owned firms that we mentioned no longer has foreign investors. The Intalco plant at Ferndale is a wholly owned subsidiary of AMAX, Inc., of Greenwich, Connecticut. Prior to November 1986, Mitsui & Co. and Nippon Steel Corp. held 50 percent of the shares, with AMAX controlling the other 50 percent.

A decrease in Japanese investment?

The Pacific Northwest Executive Stock Index

S&P 500 and the PNWE Index, August 7, 1987–July 29, 1988



Worth Reading

The Contribution of Small Business to Washington's Economy

by Robert A. Chase, LMI Review, *Washington State Security Department, KG-11, Olympia, WA 98504-5311, April 1988, pages 10-19, no charge.*

Robert Chase, an economist with the Washington Department of Trade and Economic Development, provides us with a more balanced view of the contributions of small business to the state economy than has previously been available. While acknowledging the prodigious job-creating performance of small firms in the 1980s, Chase shows that their accomplishments have varied across industrial groups and over time as the growth rate of the economy has changed. Washington firms with less than 20 employees lost fewer jobs in the recessionary years of 1981 to 1983 than all larger classes of firms. Since the start of the economic recovery in 1983, however, companies with 20 to 500 employees have done better in producing new jobs than those with less than 20 or more than 500 employees.

The relative wages paid by firms of various size are another important dimension in measuring the impact of small business. Firms with 100 or more employees account for a greater percentage of wages than employment; companies with less than 100 employees account for a greater percentage of employment than wages. These differences are due to a number of factors: the preponderance of small firms in the lower-paying sectors of the economy, the more rapid rate of employment growth in services, compared with manufacturing, and a rapid increase in the number of part-time workers in services and retail trade.

One of the sectors in which small firms have excelled is high-tech. Employment growth at very small (less than 20 employees) high-tech enterprises averaged 56 percent during the 1981-86 period, while the larger size firms grew from 4.5 to 13 percent. Moreover, average wage levels tend to be sizeable in high-tech firms, regardless of the number of personnel.

Chase contributes to the current, complex view of small business by identifying variations in small-business performance during the course of the business cycle and for different industrial groups. As he states in his concluding notes on policy, this new perception highlights the need for carefully considered, tailor-made small business assistance programs.

New Perspectives on Energy and Economic Development

by Jonathan D. Raab, Bureau of Governmental Research and Service, University of Oregon, Eugene, OR 97403, $17.00.

This piece offers some interesting empirical evidence in support of renewable-energy enthusiasts and their contention that energy conservation has local economic development implications. A homeowner or business executive who invests in cost-effective energy conservation projects does more than just reduce his or her space heating or cooling costs. A complex web of interindustry relationships is also affected. Suppliers and distributors of the conservation technology enjoy increased sales; suppliers and distributors of the energy form commonly used for space heating or cooling and of the equipment used to provide space conditioning experience the reverse. In the event that these two sets of suppliers have different geographic locations, energy conservation projects can have substantial local economic impacts.

If an investment in insulation, for example, reduces the demand for wood fuel in an Oregon town, the local economic impact might be negative: the one-time investment in insulation, which is produced outside that particular town, reduces the local demand for wood permanently. An urban Oregonian who heats with natural gas, however, might make the same investment in insulation, thereby reducing the state's imports of Canadian gas. In this case, the economic development impact might be positive, especially if local distributors and installers were used, and the main negative impacts were felt outside the state. Quite substantial positive or negative economic jolts can result from projects that look equally attractive to individuals or businesses that seek to minimize private energy costs.

The precise balance of positive and negative impacts and their geographic distribution depends on which energy form is conserved and how that energy is produced and distributed in a local area. The greater the degree of imported energy, the more likely that the region will benefit from investments in energy conservation. If a public agency, such as a municipal utility company, is interested in energy conservation for its own sake, it may find that a program that conserves energy but impairs local industry is not worth pursuing. The ideal program offers affordable energy conservation and a positive impact on the local economy.

Empirical analyses of weatherization programs that cost $25.5 million in the Lane County (Eugene), Oregon area show net benefits of more than $52 million. The net benefits are composed of local revenue accruing to installers, energy savings to householders, and payments from the Bonneville Power Administration to local staffers. These benefits were offset by the purchase costs for weatherization materials and lost income for the local utility company.

In theoretical terms, Raab has demonstrated the utility of "import substitution" as a development strategy. Reducing imports of goods and services can be just as effective in increasing the disposable income of the region's residents as selling more goods and services outside the region.

The methodology Raab employs to analyze the net economic impact of a financially viable project is one that utility company and development analysts may want to emulate. These impact analyses would aid their organizations in planning and managing programs that would benefit the local area.

In addition to the extensive analysis of Lane County weatherization programs, the Raab paper contains case studies of a number of conservation projects at energy-intensive companies. His article should be of interest to business executives who are looking for ways to lower energy costs, as well as utility company and economic development analysts who are trying to reduce energy costs and increase local business prospects.

Gross State Product Indicators

An Explanation of Gross State Product

Gross state product (GSP) is the gross market value of the goods and services produced using the labor and property located within a particular state. It is the most comprehensive measure of the value of production available for states and for the individual industries within those states. GSP and its components can be used to assess the performance of state economies, to construct economic forecasts, and to evaluate market opportunities.

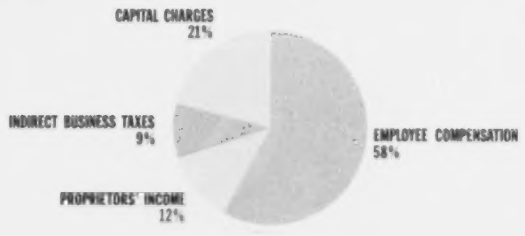
Gross State Product consists of four components: employee compensation; proprietors' income, with adjustments for inventory valuation and capital consumption; indirect business taxes and nontax liabilities; and other capital charges. Each of these four components is estimated on an annual basis for each state as a whole and for 61 industrial groups within each state.

The Bureau of Economic Analysis of the U.S. Department of Commerce has, for the first time, published GSP data in the May issue of its *Survey of Current Business*. The bureau's 1986 total gross state product for selected years and for selected industry groups for Pacific Northwest states are presented on this page.

GROSS STATE PRODUCT
In millions $

YEAR	WA	OR	ID
1963	10.306	5.896	1.872
1967	13.814	7.869	2.402
1972	19.360	12.311	3.422
1973	22.197	14.090	4.527
1974	24.946	15.536	5.200
1975	27.794	16.610	5.600
1976	31.090	19.112	6.311
1977	35.172	21.842	6.914
1978	41.869	25.519	8.202
1979	47.865	28.656	8.957
1980	51.354	30.219	9.670
1981	55.240	31.578	10.384
1982	56.745	31.148	10.432
1983	61.561	33.526	11.346
1984	67.347	36.882	12.299
1985	71.756	38.922	13.027
1986	77.683	41.278	13.170

COMPONENTS OF GROSS STATE PRODUCT, 1986
Pacific Northwest



MAJOR COMPONENTS, 1986
In millions $

	WA	OR	ID
Total Gross State Product	77.683	41.278	13.170
Employee Compensation	46.182	23.750	7.108
Proprietors' Income	8.214	5.126	2.164
Indirect Business Taxes	8.110	3.169	924
Capital Charges	15.229	9.278	2.921

GROSS STATE PRODUCT BY INDUSTRY, 1986
In millions $

	WA	OR	ID
AGRICULTURE, FORESTRY, FISHING, AND FARMS	**2,841**	**1,629**	**1,195**
Farms	2,029	1,255	1,076
Agricultural Services, Forestry, and Fishing	812	374	119
MINING	**174**	**58**	**170**
CONSTRUCTION	**4,468**	**1,355**	**438**
MANUFACTURING	**13,416**	**8,181**	**2,152**
Durable Goods	9,373	6,047	1,048
Lumber and Wood Products	1,559	2,491	434
Primary Metals Industries	624	471	3
Machinery, Except Electrical	631	605	260
Electric and Electronic Equipment	556	725	NA
Transportation Equipment, Except Motor Vehicles	4,438	239	81
Instruments and Related Products	535	609	NA
Nondurable Goods	4,042	2,134	1,104
Food and Kindred Products	1,155	814	549
Paper and Allied Products	947	594	105
Printing and Publishing	567	360	104
Chemicals and Allied Products	624	92	235
TRANSPORTATION, COMMUNICATION, AND PUBLIC UTILITIES	**6,661**	**4,141**	**1,380**
Transportation	2,955	1,676	600
Communication	2,280	1,086	295
Electric, Gas, and Sanitary Services	1,426	1,379	485
WHOLESALE TRADE	**6,243**	**3,213**	**780**
RETAIL TRADE	**8,330**	**3,913**	**1,365**
FINANCE, INSURANCE, AND REAL ESTATE	**12,187**	**7,305**	**2,000**
Banking	667	399	200
Holding Companies and Investment Services	532	263	65
Insurance Companies	902	465	96
Insurance Agents, Brokers, and Services	499	262	118
Real Estate	9,619	5,789	1,538
SERVICES	**11,687**	**6,382**	**1,980**
Hotels and Other Lodging Places	474	235	97
Personal Services	664	327	112
Business Services	2,366	1,171	486
Auto Repair, Services, and Garages	752	408	129
Health Services	3,565	2,204	541
Legal Services	840	462	114
Educational Services	278	184	49
Social Service and Membership Organizations	766	458	126
Miscellaneous Professional Services	1,163	539	210
GOVERNMENT	**11,696**	**5,942**	**1,842**
Federal Civilian Government	2,297	1,038	310
Federal Military Government	1,751	160	207
State and Local Government	7,648	3,843	1,125
TOTAL	**77,683**	**41,278**	**13,170**

Agricultural Production Indicators[1]

NUMBER OF FARMS[2]
In thousands

YEAR	WA	OR	ID
1960	58.0	47.0	36.3
1965	48.5	43.0	31.2
1970	41.0	34.5	28.5
1975	34.0	30.0	24.1
1980	38.0	35.0	24.4
1983	38.0	37.5	24.4
1984	38.0	37.0	24.6
1985	38.0	37.0	24.6
1986	38.0	37.0	24.0
1987	37.0	37.0	24.0

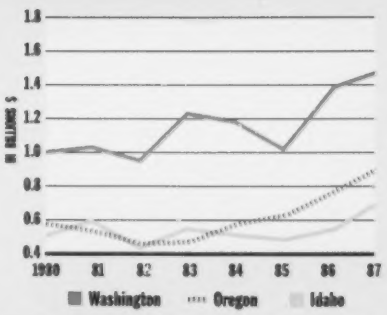
TOTAL VALUE OF[3] AGRICULTURAL PRODUCTION
In millions $

WA	OR	ID
612	450	516
703	495	556
892	614	723
1,994	1,179	1,442
2,952	1,912	2,322
3,240	1,950	2,323
3,277	2,017	2,232
3,031	1,941	2,032
3,062	2,005	2,040
2,885	2,106	1,878

FARM PERSONAL INCOME[4]
In millions $

WA	OR	ID
268	185	159
288	186	238
361	235	277
943	431	416
1,007	582	512
1,238	478	557
1,188	583	521
1,029	631	494
1,384	765	533
1,436	918	717

FARM PERSONAL INCOME



GOVERNMENT[3, 5] PAYMENTS
In millions $

YEAR	WA	OR	ID
1960	10	9	13
1965	40	24	29
1970	58	23	48
1975	7	5	9
1980	9	6	8
1983	159	64	136
1984	171	76	133
1985	155	71	122
1986	299	128	223
1987	292	127	234

AVERAGE NET INCOME[4, 6] PER FARM
In $

WA	OR	ID
4,786	3,936	4,380
5,938	4,326	7,638
8,805	6,812	9,719
27,735	14,367	17,261
26,500	16,629	20,964
32,579	12,747	22,828
31,263	15,757	21,179
27,879	17,054	20,041
36,421	20,676	22,208
40,162	24,811	29,875

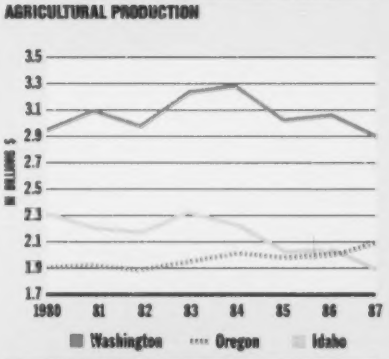
FARM ASSETS[5] Including households
In millions $

WA	OR	
NA	NA	NA
NA	NA	NA
NA	NA	NA
7,763	6,438	7,286
18,799	15,832	15,689
20,111	16,328	16,035
19,370	14,235	14,820
17,412	13,038	12,632
15,829	12,278	11,437
NA	NA	NA

PRICES[4] RECEIVED/ PRICES PAID
US 1977 = 100

118
115
109
113
97
84
86
79
77
78

AGRICULTURAL PRODUCTION



LIVESTOCK AND LIVESTOCK PRODUCTS
In millions $

YEAR	WA	OR	ID
1960	224	191	165
1965	235	186	175
1970	306	254	269
1975	454	321	386
1980	811	565	759
1983	908	564	735
1984	940	571	728
1985	885	558	758
1986	886	553	714
1987	924	630	775

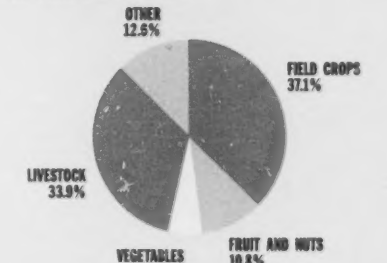
CATTLE AND CALVES
In millions $

WA	OR	ID
68	82	87
76	92	100
113	141	168
132	155	231
311	312	480
317	273	396
340	277	405
283	265	413
294	254	389
326	289	453

MILK
In millions $

WA	OR	ID
85	53	57
87	47	52
125	59	73
213	92	127
383	158	239
476	194	298
467	186	281
478	189	294
469	188	280
475	187	273

AGRICULTURE PRODUCTION, 1987
Pacific Northwest, In millions $



FIELD CROPS[7]
In millions $

YEAR	WA	OR	ID
1960	251	152	343
1965	295	154	385
1970	378	171	436
1975	1,077	533	1,017
1980	1,432	743	1,511
1983	1,485	722	1,521
1984	1,509	706	1,445
1985	1,230	645	1,216
1986	1,053	567	1,251
1987	959	557	1,034

WHEAT
In millions $

WA	OR	ID
117	48	57
121	39	62
137	39	58
553	219	215
638	308	357
637	242	315
553	239	269
437	191	229
293	151	195
309	143	217

FRUIT AND NUT CROPS
In millions $

WA	OR	ID
87	42	5
98	57	8
122	61	7
209	76	13
370	126	27
502	134	27
461	127	29
490	167	32
683	172	28
517	192	30

WASHINGTON APPLES
In millions $

53
69
70
134
248
349
326
349
489
312

NOTES:

1. Unless otherwise noted, figures are those of the Crop and Livestock Reporting Services of Washington, Oregon, and Idaho. We thank the personnel of these offices for their efforts to provide us with data. Readers should be aware that some numbers are subject to revision. The term "NA" means that these numbers were not yet available.
2. In 1975 the definition of a farm was changed to include places with agricultural sales of $1,000 or more.
3. The figures for 1987 are preliminary estimates.
4. Bureau of Economic Analysis, U.S. Department of Commerce.
5. U.S. Department of Agriculture.
6. Revised to include all farm income and farms.
7. Idaho's 1987 total does not include the figure for sugar beets. Oregon's 1987 sugar beet total is based on 1986 prices.

The Printing and Publishing Industry: A Rising Star

One of the Pacific Northwest's standout performers in new-job creation is the printing and publishing industry. During the last eight years, printers in Oregon and Washington have created jobs more rapidly than other manufacturers in the region and than the national printing and publishing industry (Figure 1).

The printing and publishing industry—which includes commercial printers, newspapers, book and periodical publishers, typesetters, book binderies, plate makers, and others—remains small compared with the total figures for manufacturing. In Washington, 20,100 printing and publishing workers signified only 6.3 percent of manufacturing employment in 1987. In Oregon, the printing and publishing industry's 12,700 employees constituted 6.2 percent of the state's 1987 manufacturing work force. The rate of employment growth in printing and publishing, however, is extraordinary in both of these states.

Washington's printing and publishing employment growth rate remained at or above zero through the 1980 and 1982 recessions, despite four years of decline in the state's total manufacturing employment between 1980 and 1987. The cumulative change in employment in printing and publishing in Washington from 1979 to 1987 was 30.5 percent, compared with a manufacturing employment increase of only 2.3 percent. Only in 1982 did Oregon's printing and publishing industry growth rate fall below the zero mark, despite manufacturing employment declines in five of the eight years shown in Figure 1. In Oregon, printing and publishing's gain of 27 percent stands in even sharper contrast to the state's overall manufacturing cumulative change of –10.3 percent. Oregon's experience is similar to, but even more extreme than, the national experience: the United States recorded an increase of 21.5 percent for printing and publishing and a decline of –9.2 percent for overall manufacturing.

Revenue Growth

Employment is the major indicator of the growth in printing and publishing for both Washington and Oregon. We can also examine revenues and the number of establishments reporting revenues in Washington by analyzing the state's controversial gross receipts tax. Gross receipts are reported quarterly by the Department of Revenue; aggregating these numbers into annual receipts and adjusting for the effects of inflation provides a framework for investigating revenue trends in the printing and publishing industry and for all manufacturing firms (Figure 2, page 16).

Real revenues (in constant 1988 dollars) in both the printing industry and all manufacturing rose from 1978 to 1979 and then declined during the periods of recession and stagflation from 1980 to 1982. Thereafter, manufacturing revenues rose slowly, at a 3.0 percent real compounded rate, from 1982 through 1987. As of the end of 1987, revenues were still well below the totals of the peak years of 1979 and 1980. In contrast, printing and publishing revenues, which did not climb as rapidly as the earnings for all manufacturing in the 1978-1980 period, rose at a slightly faster 3.2 percent real rate from 1982 to 1987 and, by the close of 1987, were nearly $175 million higher than their 1978 level.

Between 1978 and 1987, the three major segments of the printing and publishing industry developed along quite different lines. Newspapers accounted for more than 50 percent of printing and publishing industry revenues in 1978, but, within 10 years, real newspaper revenues had declined by nearly 10 percent. In contrast, periodical and book publishing, a small segment of the industry, grew by 47 percent, accounting for 12 percent of industry revenues in 1987. The largest absolute gain for the time period was in commercial printing: a $43 million real revenue gain increased its share of printing and publishing industry revenues from 35 percent in 1978 to 42 percent in 1987.

Establishment Size

A close examination of the printing industry's performance reveals that the post-1982 period is characterized by a rapid expansion in the number of establishments reporting revenues to the state of Washington. All manufacturing expanded from 5,691 reporting units in 1981 to 6,580 units in 1987, an increase of nearly 16 percent. The number of printing and publishing establishments, in comparison, expanded from 974 in 1981 to 1,358 in 1987, an increase of 39 percent. Commercial printers accounted for 60 percent of the increase in reporting establishments, and most of the remainder was attributable to periodical and book publishers.

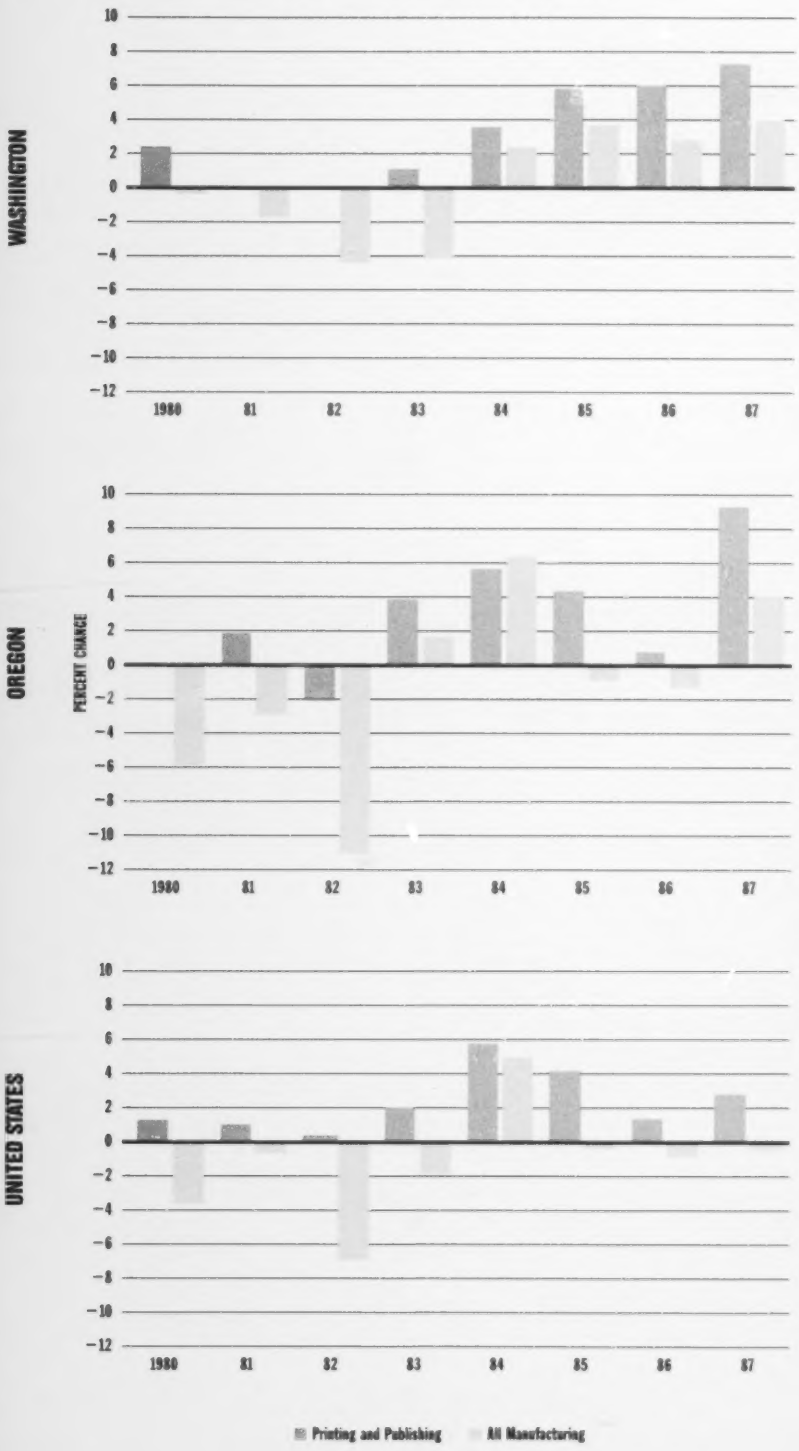
With the number of establishments increasing more rapidly than real revenues, firms in the printing industry—and in all manufacturing—have recorded a drop in average size. In manufacturing, the average size of an establishment decreased 11 percent—from just over $7 million in annual gross receipts in 1981 to $6.3 million in 1987. In printing and publishing, the change was more dramatic: average annual revenues per establishment were $1.2 million in 1981, but had fallen 18 percent to under $1 million by 1987.

Linkage to Other Industries

What explains the printing and publishing industry's stellar performance as an employer in the Pacific Northwest? The expansion of the region's commercial printing business is linked to the growth of the several key industrial sectors that are the major customers for printing businesses.

In Washington, the single most dramatic factor explaining the growth of the printing industry is the boom in computer-related firms on the east side of Lake Washington. Computer products, whether hardware or software, inevitably require a technical manual to tell users how to install and operate the devices. As one executive explained,

Figure 1: Annual Growth Rates of Printing and Manufacturing Employment, 1979–1987



"You take a disk that costs a few cents and add a manual that costs a few dollars, and you have a software product ready for consumers." This executive noted that research and development and marketing costs are a major part of a software company's cost structure and added that the disk duplication and printing costs are a fairly small item in the software budget.

Microsoft's net revenues grew at a compound rate of 70 percent per year from 1982 to 1987, and when Microsoft's revenues are added together with those of Microrim, Weyerhaeuser Information Systems, Aldus, Applied Microsystems, and the many other software companies in the area, a substantial and rapidly growing market is created for commercial printers. One local printing firm has generated a 25 percent annual growth rate in the last five years through its production of software manuals.

According to the Economic Development Partnership for Washington, the design and construction of computers and peripherals employed 70 percent more workers in 1985 than did the local software industry. Every computer, printer, modem, or other locally produced computer hardware product on the market comes with a manual or set of instructions, and many of these are printed in the area. Hardware products, which have a larger average per-unit value, represent, in the aggregate, a somewhat smaller market for commercial printers than software products, but the hardware market is still substantial and it has grown in the 1980s.

Part of the reason for the emergence of smaller establishments in the printing industry can be traced to the computer and software industries. Technology and market share change so rapidly in these industries that large annual print orders are rare for local printing firms. Software houses order in relatively small quantities and allow only short lead-times for production. To meet this demand, printing firms must be very flexible, and this flexibility is the hallmark of the small, entrepreneurial company. As a consequence, some of the larger, older printing firms in the region do little of the print production work for rapidly changing high-technology firms. The new, smaller firms get proportionately more of this business.

A printer's nearness to the customer is an advantage both in obtaining orders and in responding to the client's rapidly changing requirements. The printing industry in the Seattle metropolitan area has capitalized on the growth of the local software industry,

but the Seattle-area computer market, in comparison, is of much less significance to Portland printers.

Advertising agencies are another important client group for the printing industry. A direct mail industry is emerging in the Pacific Northwest and throughout the United States, the result of the consumer-driven expansion of the national economy from 1983 on. The gross revenues of Washington advertising agencies nearly tripled from 1982 to 1987—total receipts rose from $93 million (in constant 1967 dollars) to $268 million. Firms such as Craftsman Press in Seattle and Graphic Arts Center in Portland depend on large print orders from advertising agencies for a major portion of their revenue. While the growth of advertising agencies in the region has provided a significant market for printing services, the larger printers are also able to compete in the national market for printing orders.

The finance, insurance, and real estate sectors are also large consumers of printing services. Real gross revenues in these sectors expanded by 22 percent from 1982 to 1987, to $9.2 billion, providing a modest market increase for the printing companies that serve them.

Accounting for Growth

The presumed linkage of the commercial printing industry to the growth of these three sectors—computer hardware and software, advertising agencies, and the finance, insurance, and real estate sectors—is supported by evidence from the Washington Input-Output Model (*Pacific Northwest Executive*, January 1987). From this model, printing and publishing's input can be related to the output of specific sectors. The relevant sectors for printing are trade, which encompasses wholesale and retail trade; finance, insurance, and real estate; and services, a sector that includes both advertising agencies and software manufacturers. The growth in revenues of these sectors from 1982 to 1987, weighted by their printing industry input/output ratios, provides a prediction of the growth rate of commercial printing industry revenues due to expansion within the customer base.

The growth of these three customer sectors within the state of Washington indicates a 27-percent expansion of demand for printing services from 1982 to 1987. If printing industry exports to the rest of the country and to foreign customers are intended for these same business sectors, an additional expansion of 3 percent is implied. Using the input-output model, 30 percent of the commercial printing industry's 33 percent sales expansion from 1982 to 1987 can be accounted for by the growth of its three largest business customers.

The Long-Term Outlook for Printing and Publishing

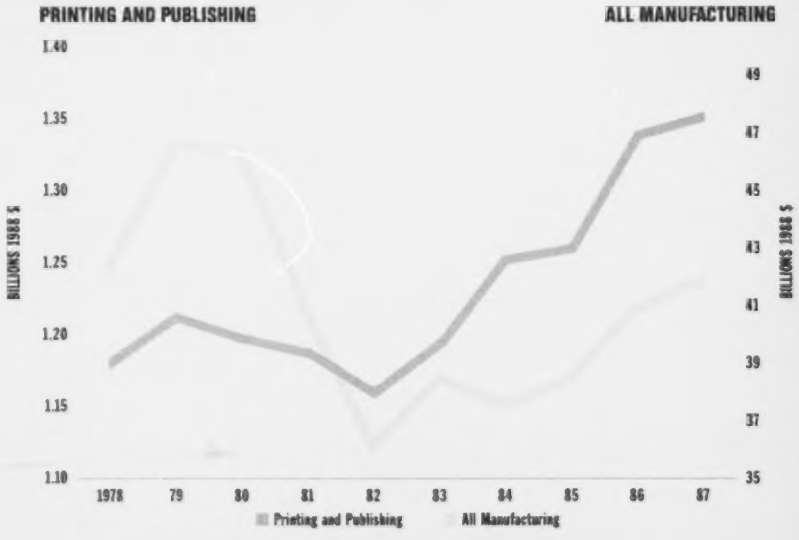
The crucial determinants of the long-run prosperity of the printing industry are the pace of overall economic growth in the Pacific Northwest, the growth rate of the personal computer industry, and the success of the local and national advertising industry. The overall rate of growth in the region will influence consumer demand for printing and determine the volume of commercial advertising, brochures, and manuals that emanates from a wide variety of expanding regional businesses. Many of the growing firms are likely to be producer service or high-tech firms. Printing companies that are flexible and customer-oriented are likely to do well in this market.

For Seattle-area printers, the success of the personal computer industry is a critical factor. Many small companies have entered this industry in the last eight years, and several have become firms of international stature, with phenomenal growth rates. How long can these rapid rates of growth continue?

The pace of new hardware product announcements in the computer industry and the transition from the original DOS operating system for the IBM (and its compatible family of computers) to the new OS/2 operating system suggest continued technology-driven growth opportunities for both hardware and software developers. The higher costs for the new models of personal computers, the new operating system, and the application programs needed under the new operating system, however, suggest a slowing of computer industry growth. The reason for the anticipated slowdown is that the new generation of hardware and software must compete against an installed base of earlier generation computers. Businesses will evaluate the advantages of switching to the new computers and programs and compare these to their existing personal computer base—not to the typewriters and desktop calculators that the first generation of personal computers replaced. The outcome of that comparison may result in a slower expansion of demand for the next generation of computers and software than was the case for the first models. If the rate of growth within the computer industry declines, that, in turn, will result in a slower growth rate for the printers who rely on computer-related companies.

The risks of being solely dependent on the computer industry are ever-present in the minds of printing company executives.

Figure 2: Gross Revenues of Washington Manufacturing Firms



One executive indicated that his firm prefers to buy general-purpose equipment that can later be used in doing advertising materials or other types of printing jobs—they don't invest in equipment that is useful only for printing manuals. By building up capacity through exploitation of the computer market, this firm hopes to break into the national advertising market. This strategy of doing all of the computer-related business possible while keeping an eye on other long-term markets is well-advised, given the possibility for a slowdown of computer industry growth rates in the next decade.

The national advertising market that this computer-oriented printer is looking to enter, however, may itself face much lower growth rates in the next decade. The advertising business has ridden a wave of consumer spending in the 1980s. Encouraged by tax cuts, lower interest rates, and growing personal income levels, American consumers went on a spending binge from 1983 through 1986. Consumption expenditures slowed considerably in 1987, and the growth rate dropped below zero in the last quarter of the year. A high debt burden and a slower rate of growth in personal income is expected to keep consumer spending lean for the remainder of this business cycle.

There is a widespread expectation that after the next president takes office, he will undoubtedly be called upon to reduce the nation's trade deficit and the federal deficit. The trade deficit is already shrinking as a result of export expansion. A deficit reduction is likely to result in a slower growth of consumption due to tax increases, higher interest rates, or inflation in the prices of import goods. A drop in the rate of consumption growth is likely to lead to a decrease in demand for advertising on the part of the retail trade sector. As a consequence, slower growth in advertising will reduce that industry's demand for printing services.

If two of the printing industry's major customers cut back on their print orders, the industry itself will face internal adjustments. The weaker performers may be forced out of business as the result of a growth slowdown. Some of the larger printers now perceive an excessive amount of capacity in the region. If demand growth diminishes as consumer spending slows down or if we fall into a severe recession as government and businesses cope with the impacts of the twin deficits, the printing and publishing industry's current excess capacity is likely to be idled.

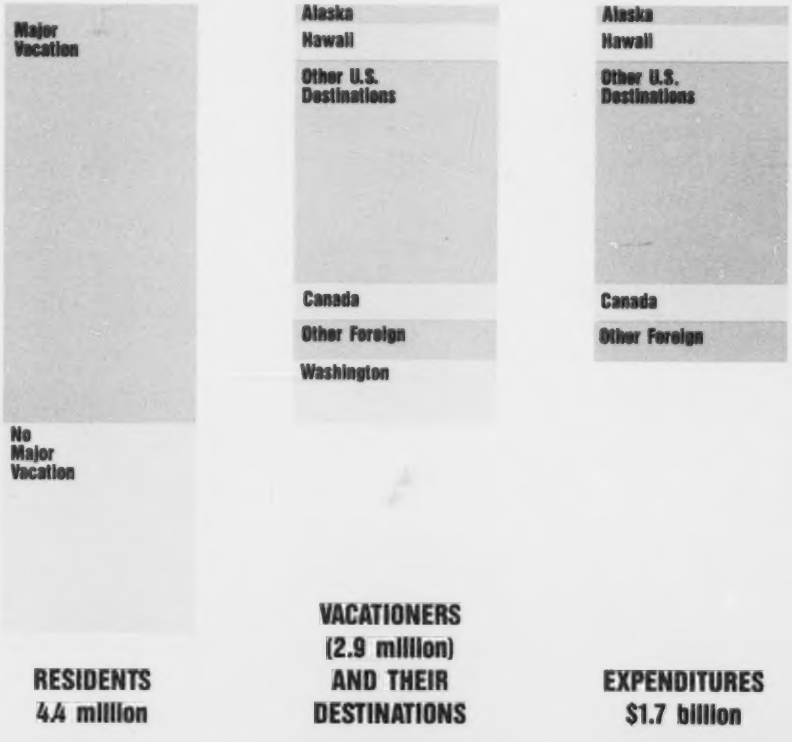
The Ins and Outs of Tourism

Did you and your household take a vacation this year? If so, where did you go? Nearly two-thirds of the Pacific Northwest's households take a traditional one- to two-week vacation each year—but less than one in four vacationers spend their leisure holidays in their home state. The remaining residents spend a good deal of their vacation time and budget on travel to out-of-state destinations.

These outflows of income—regional economists call them "leakages"—are seldom referred to in state-sponsored studies of the tourism industry. Northwest tourism promotion offices carefully observe, sample, and count travelers from other states and countries and publish estimates of tourist spending. Foreign tourists, for example, spent $235 million in Washington in 1987. Total visitor expenditures in Washington topped $3.4 billion in 1986 and $2.4 billion in Oregon in 1985. An accurate estimate of the net impact of tourism in the region, however, requires that promotion offices subtract the leakage of income from state residents who spend their tourism dollars elsewhere.

One reason why net impact tourism studies are seldom attempted is that the data

Figure 1: Vacation Patterns of Washington Residents, 1986



on the outflow side of the equation are weak. A model used by the U.S. Travel Data Center in Washington, D.C., employs studies of incoming tourists—based on visitor inquiries to state offices, counts of airline passengers, hotel occupancy figures, and other sources—to estimate statewide tourism impacts. No comparable model exists on the outflow side, but researchers at universities in Washington, Oregon, and Idaho have conducted studies of the vacation patterns of small samples (400 to 5,300 people) of randomly selected state residents. Additional insights have been obtained from studies of visitors to Alaska, Hawaii, and Canada—the three major tourist destinations for Northwest travelers.

Prior studies of the tourism behavior of Pacific Northwest residents have not attempted to extrapolate the limited sample findings to the state or regional level. The *Pacific Northwest Executive* staff has constructed estimates of the total out-of-state expenditures by residents of each of the Pacific Northwest states; these estimates assume equal spending per tourist per day, regardless of the destination. Given the limited size of the available samples, however, the figures that follow must be viewed, at best, as ballpark estimates.

Washington: The Scatter Effect

Travel activity surveys conducted by Washington State University's Professor Michael Blazey provide a starting point for analyzing the travel behavior of the state's residents. According to Blazey's 1986 survey of 500 Washington residents, 66 percent of Washington's households took a major vacation—defined as a 12-day trip—in 1986 and spent $1,185 while away from home. These observations, combined with data on Washington residents who visit Canada (from the Tourism Division of the Department of Trade and Economic Development) and studies of visitors to Alaska, show where Washingtonians went on their vacations and how much money they spent on leisure activities outside of the state (Figure 1).

If, as Blazey's sample implies, 66 percent of the state's 4.4 million residents took a major vacation in 1986, 2.9 million Washingtonians took time off. Only 14 percent of these 2.9 million vacationers stayed in the state; the vast majority visited Hawaii, Canada, Alaska, and other U.S. states. The expenditure estimates in Blazey's sample imply an out-of-state leakage of $1.7 billion when extrapolated to the state level. The net impact of tourism on Washington, once the leakages from the state's economy are accounted for, is $1.7 billion—not the $3.4 billion of gross income reported by the Tourism Division.

Oregon: The Lure of California

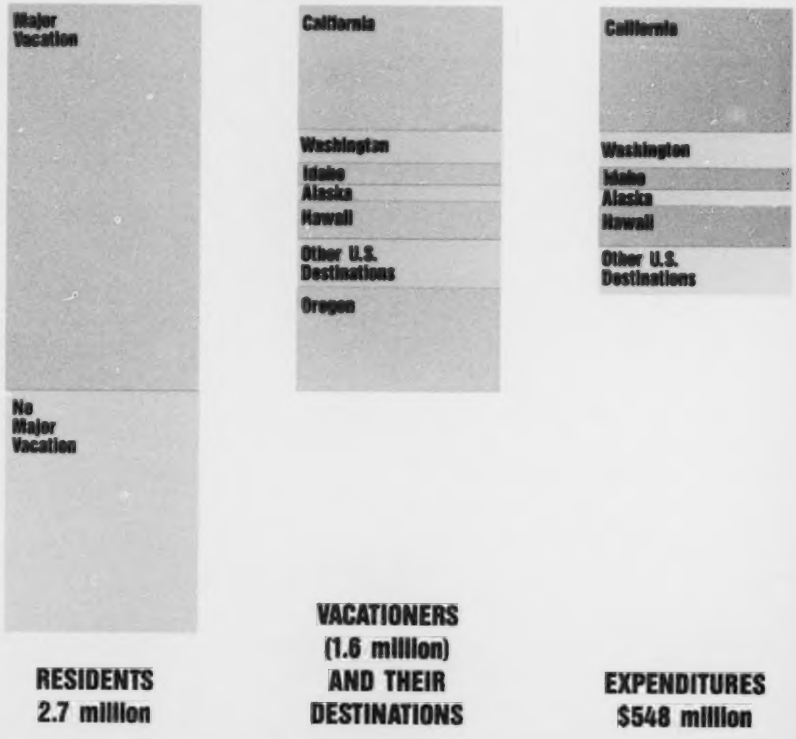
Professor Dennis Howard of the University of Oregon conducted similar studies in the travel behavior of Oregon residents. His data for 1984 and 1985 show that 61 percent of the sample of 414 respondents took a major vacation, and expenditures for each leisure holiday averaged $1,156 per household or group. By coupling these numbers with the Alaska and Hawaii studies of incoming tourists, we can estimate statewide visitor and expenditure outlays (Figure 2).

Of Oregon's 2.7 million residents, 1.6 million took a major vacation in 1985. A quarter of the travelers stayed in Oregon, 32 percent went south to California, nearly 10 percent visited Hawaii, 9 percent crossed into Washington, 6 percent went to Idaho, 5 percent visited Alaska, and the remainder traveled to other destinations. While outside their home state, Oregonians spent more than half a billion dollars, reducing the 1985 net impact of tourism in Oregon from the $2.4 billion reported by the Oregon Tourism Division to $1.9 billion.

Idaho: A Pacific Northwest Trip

The best tourism study in the Pacific Northwest was conducted by the University of Idaho's Professor Charles Harris and several colleagues. They divided the state into six regions and then chose six highway locations in each region as interviewing points. They also set up interviewing stations at two airports. At each of these points and in each of the four quarters of 1986, people were stopped at random and asked whether they were traveling, at least in part, for pleasure. Of the 16,413 groups stopped at the interception sites, a total of 34 percent (5,366) were traveling for pleasure. The groups were asked additional questions about their travel, then were requested to

Figure 2: Vacation Patterns of Oregon Residents, 1985



fill out a two-day expenditure diary and mail it back to the survey team, and to nominate a representative of the group, who would respond to a questionnaire mailed to that person's home address after the completion of the trip.

The authors of the Idaho study are confident that statistically representative sample data were obtained. They received a 38-percent response rate on the diaries and a 61-percent response rate on the questionnaires. There was no indication of significant statistical differences between the characteristics of respondents who were stopped and interviewed on the roadside and those who completed diaries or questionnaires.

Extrapolating the survey results to the state level, 341,000 Idaho residents spent an average of seven days on a major trip (Figure 3). Almost half of these travelers chose to vacation in Idaho. Another 24 percent traveled outside the state, but did not limit themselves to a single destination. And 20 percent visited one of Idaho's neighboring states: Montana, Nevada, Oregon, Utah, Washington, and Wyoming. Vacationers from Idaho, unlike their counterparts from Washington and Oregon, were more likely to take a Pacific Northwest trip.

The two-day expenditure diaries revealed mean expenditures of $135 for travelers with an Idaho destination in mind and $159 for those headed out of state, whatever their destinations. Travelers who remained in Idaho spent substantially less on lodging, but slightly more on recreational equipment and fees, than those headed for other states. The survey implies total out-of-state expenditures of $106 million; in addition, up to $84 million could have been spent either on in-state or out-of-state travel by those travelers who indicated no specific destination.

Shorter Trips and More of Them

A major limitation of the Washington and Oregon results is that the data was collected only for expenditures on major vacations. The Idaho study is much more comprehensive, but, like the other two, it doesn't include data on the frequency of short trips.

American households in general are taking shorter, more frequent pleasure trips instead of the traditional two-week family vacation. A 1987 study by Marriott Hotels reports that the average American takes a total of almost five trips each year, and only one lasts longer than four days. The other pleasure trips involve a combination of weekend travel and short trips during the week.

Shorter trips are more likely to involve travel within the home state, so there is less leakage of income than with the 12-day vacation trips. Decreased airfares, however, have made long-distance travel a realistic possibility, even for short trips. A quick visit to Aunt Sally in Chicago, a winter weekend in a sunnier climate, or a few days of gambling and nightlife in Reno or Las Vegas are on the agenda of many Pacific Northwesterners. If short trips are also taken into account, the estimates of the tourist expenditures of Pacific Northwest residents outside their home state might be as much as 50 percent higher.

Marketing to Pacific Northwest Residents

Tourism is a profitable industry in the Pacific Northwest. More money is spent here by residents of the rest of the United States and of other countries than is spent by regional residents who travel outside the area. The net benefits of tourism, however, are considerably reduced when the travel expenditures of Pacific Northwest residents outside the region are taken into account. From a public policy and tourism industry perspective, a marketing strategy aimed at regional residents might be as promising and as profitable as a strategy aimed at vacationers who originate from other parts of the country and the world.

Washingtonians, Oregonians, and Idahoans frequently visit other states within the Pacific Northwest. In addition, many out-of-region tourists visit more than one Northwest state during their 12-day vacations. Marketing the Pacific Northwest as a whole, as opposed to marketing each state's attractions separately, may be a viable strategy for keeping more resident tourist dollars at home and for attracting additional tourists from beyond the region's borders. A Pacific Northwest campaign, which could amass a larger budget than any single state could afford, may produce a more substantial impact on both resident and nonresident travel choices.

Figure 3: Vacation Patterns of Idaho Residents, 1987

Interstate Competition For Economic Development Opportunities

by Eric Friedli

In the business version of the War Between the States, state governments have been competing one against the others in an attempt to attract business and industrial investment and jobs. A recent and highly visible example of this interstate rivalry is the Department of Energy's multi-billion-dollar superconducting supercollider. Once the high-tech project was announced, states were encouraged to submit competitive proposals to the DOE. Twenty-five states entered the contest, each lauding the technical merits of its site(s), as well as state-sponsored sweeteners such as free land and special education programs for the children of would-be employees. The competition has been narrowed to eight states (Texas, Illinois, New York, North Carolina, Arizona, Colorado, Tennessee, and Michigan), and each semifinalist continues to vie with the others for this economic development opportunity.

Other recent examples of "smokestack chasing" or "microchip chasing" include the General Motors Saturn automobile plant and US West Direct research facility. Essentially, states want to influence the location decisions of businesses: where to move an entire business operation, where to open a branch plant, or where to start a new business. Business managers base their location decisions on factors such as labor, proximity to raw materials, proximity to markets, amenities and quality of life, taxes, transportation costs, the availability of capital, and the availability of land. Different types of businesses will weigh these factors according to their specific needs. A heavy manufacturing branch plant may consider labor and transportation costs most important; a start-up business would put a high priority on the location of the entrepreneur and the availability of capital.

In a few instances, location decisions are based strictly on the various costs and benefits that the business associates with different locations, with no concern for special state economic development programs. Most states, however, attempt to exercise special influence over business location decisions by boosting their attractiveness through tax incentives, loans and loan guarantees, development bond financing, labor enhancement, infrastructure development, and research and development assistance. The particular aspects of each type of enhancement vary from state to state and from project to project.

The Market for Jobs

"We live in a competitive environment," Washington Governor Booth Gardner has stated. "We have to reach out and compete aggressively." The competition for jobs is evident: there are fewer businesses making location decisions than there are states that want them. Competition among states has become an important aspect of the econom-

Figure 1: If you feel that it is necessary for Washington to compete, with which states should it compete?

SOURCE: Author survey, 1986

ic development debate: the extent to which states compete is dictated by the amount and intent of public resources.

A survey of state development agencies conducted by the National Conference of State Legislatures found that 33 states rank economic development as one of the most important issues facing their state. Twenty-five states indicated that the loss of business to other states or countries is a factor that most influences the importance of economic development as an issue. Generally, those states are located along the Eastern seaboard and in the Midwest and South along the Mississippi River. Other influential factors that were listed in the survey are economic decline (37 states), decline in state tax revenues (27 states), decline in federal economic development support (26 states), and reliance on mature industries (23 states).

In a 1986 Washington survey of 316 state policy-makers and economic development officials, 75 percent of the respondents stated that it is somewhat or very important for the state to have programs that are equal to or better than programs in other states (Table 1). Nonlegislators who responded to the survey felt more strongly about the need for competitive programs as a group than did legislators. Thirty-seven percent of the survey respondents rated Washington's programs as worse than average when compared to those of other states; 20 percent said that they are better than average (Table 2).

The respondents viewed the competitive environment primarily as a regional phenomenon (Figure 1). The policy-makers and economic development officials who feel it is necessary for Washington to compete with other states said that Washington's strongest competition comes from Oregon and California. (Other Western states frequently mentioned as competitors were Idaho, Utah, Arizona, and New Mexico.) This regional focus indicates that Washington doesn't need to have the best incentive programs in the nation, but that Washington does need to be better than its neighbors. When asked which states have the best economic development programs, respondents overwhelmingly rated Massachusetts and North Carolina as numbers one and two, but the respondents didn't feel that Washington needs to compete with those states (Figure 2).

Models of Competitive Behavior

The existence of a highly competitive environment, as indicated by Governor Gardner, does not automatically mean that each state is actively or aggressively competing. Competition, the act of trying to beat out a rival for some desired good by offering the most favorable terms, exists along an active-to-passive continuum. Passive competitors simply don't study or plot a strategy against rivals. Active competitors study other rivals and use the information gained to devise a strategy that will add to the likelihood of obtaining the desired result. There are, essentially, three models of economic development activity: the grab-it model, the efficiency model, and the no-deal model.

Within the **grab-it model**, state governments enact economic development policies and programs that are directly responsive to the case-by-case needs of specific businesses. These policies and programs aren't guided by an overall economic development plan; instead, they equip the economic development bureaucracy with the negotiating power and tools to respond to specific opportunities.

The Washington Ambassador Program is an example of a grab-it program: the ambassadors look for and identify economic development opportunities both within and outside of the state, then the state develops specific incentives to address the locational

Figure 2: Which states do you feel have the best economic development programs?

SOURCE: Author survey, 1986

Table 1: How important is it for Washington to create economic development programs that are equal to or better than programs in other states?

	REPUBLICANS	DEMOCRATS	NONLEGISLATORS	TOTAL
1 (not important)	7%	6%	1%	3%
2	10	3	5	5
3	21	22	14	17
4	28	32	23	26
5 (very important)	32	35	56	49

(Totals do not add up to 100% due to rounding.)

Table 2: In your opinion, how do current Washington State economic development programs compare to programs in other states?

	REPUBLICANS	DEMOCRATS	NONLEGISLATORS	TOTAL
1 (worse)	8%	0%	6%	5%
2	42	15	33	32
3	39	59	41	43
4	12	22	15	16
5 (better)	0	4	5	4

Table 3: In your opinion, how comprehensive is Washington State's economic development strategy?

	REPUBLICANS	DEMOCRATS	NONLEGISLATORS	TOTAL
1 (not comprehensive)	36%	13%	15%	18%
2	28	10	28	25
3	32	52	40	41
4	4	23	13	13
5 (very comprehensive)	0	3	4	3

needs of the business. These attractions may include existing programs or may require the legislature to enact special programs. Special concessions to business may be successful, but a state is generally in a better negotiating position if it has an established set of programs to grab the business without political debate.

The grab-it model is, in many cases, a political necessity. With prizes such as GM Saturn and the superconducting supercollider, a state must respond to a competitive challenge and make an attempt to attract enterprises and their associated jobs. In high-profile cases such as these, state politicians must be able to demonstrate their concern for new projects and point to their activities in the economic development arena. State residents tend to see it as a great failure on the part of the state government if no response is made to highly publicized economic development opportunities.

As part of the **efficiency model**, a state outlines a comprehensive plan to assist economic growth, agreeing on the needs of the state, the goals of the economic development plan, and the methods to address the needs and achieve the goals. The comprehensive plan should take into consideration education, tax policy, infrastructure development, capital availability, and the quality and costs of labor. The efficiency model places a high level of importance on understanding the gains that the state will receive from each policy or program enacted in relation to the costs of each policy or program.

The state of Washington, through the Economic Development Board, is now finalizing a comprehensive plan for economic development. There have been other "comprehensive" economic development plans set before the state, but only 16 percent of policy-makers and development officials in the 1986 survey agreed that the state had a comprehensive economic development policy. Forty-three percent thought that the state didn't have a comprehensive policy (Table 3).

In a partisan system of government, many issues stand in the way of developing the strong consensus required to form the efficiency model. To do so, each state needs to build a bipartisan approach to economic development.

The **no-deal model** is not a politically feasible option. A state that used this model would make no attempt to develop a strategic plan, wouldn't cut deals, wouldn't spend public resources, and wouldn't receive extra economic development opportunities. This state would simply say that economic development can take care of itself and leave businesses to make location decisions for themselves.

The no-deal model isn't endorsed by any state. Voting behavior is closely tied to economic factors, and most politicians see the need for economic and job growth. Development programs and policies are an important aspect of addressing economic need, and politicians support development efforts at some level for political, if not economic, reasons.

Politics and Development Models

Washington State appears to have had a long-standing desire to follow the efficiency model, but has been unsuccessful in implementing the necessary comprehensive economic development plan. The efficiency model is extremely difficult to achieve because of the political system within which policies and programs are developed. It is easier, from that standpoint, to grab businesses that become available rather than continue to battle over comprehensive development goals. And, politically, it's important for politicians to be able to point to a string of economic development efforts. It's more difficult for politicians to point to the planning activities and the failures that occur with the efficiency model.

Policy-makers who want to follow the efficiency model should place special attention on consensus building. This is the approach of the Washington State Economic Development Board. The success of that board's work in developing a comprehensive economic development strategy will depend on its consensus-building effort. If the effort fails, the state will return to the grab-it model.

Eric Friedli is a research scientist at Battelle's Human Affairs Research Center in Seattle.

Washington State and Its Role in the Pacific Rim: The Link Between Educational Policy and Economic Prosperity

by Tren J. Griffin

NEARLY EVERYONE AGREES that efforts should be made to accelerate Washington State's development as a center for Pacific Rim trade. It would, in fact, be a challenge to find a resolution that has more public support. The political left, center, and right consider an increased presence of the state of Washington in the Pacific Rim synonymous with economic development and job creation.

It is not surprising that politicians continually make pronouncements about their efforts to promote the internationalization of Washington. The major focus of their overseas activities has been their travel, for several weeks a year, in the guise of "trade missionaries." Washington's politicians are not alone in scheduling these trips to foreign countries. Last September, for example, 14 United States governors and their delegations visited Seoul. The cacophony caused by these 14 governors was amplified by delegations from U.S. cities and port commissions. When viewed from overseas, the procession of U.S. politicians panhandling for foreign investment is almost comical.

The presentations made by most state delegations focus on the special tax benefits and other attractions that are available to foreign companies that establish a business within state borders. The politicians and their staffs bend over backward to offer a wide range of concessions to Asian companies—privileges that include tax holidays and deferments, subsidized infrastructure, and capital at less-than-market rates. While Asian businesses are not likely to refuse these benefits, individuals who have been involved in the decision-making process understand that what Asian companies are really looking for is a location that has sufficient infrastructure, a pleasant environment, a good tax structure, and a well-educated work force. On the positive side, Washington already has the port facilities and other services necessary to support foreign and domestic businesses, and the living environment in the state is excellent. The negatives include the state's tax structure and the increasingly clear impression that Washington's educational standards are slipping.

At the college and university level, reductions in funding for education dropped Washington from 30th place in the nation in 1983 to 46th in 1987. The appropriation for higher education has fallen from 20 percent of the state's budget in the 1970s to less than 15 percent. On a per student basis, funding at the University of Washington is approximately $2,500 less than at comparable state universities in California, North Carolina, Illinois, and Michigan. Given this funding disparity, academic standards will inevitably fall. And as Washington's educational standards decline, its attractiveness to Asian business is correspondingly reduced, and the state's ability to produce an educated, ready work force is called into question.

Contrary to popular belief, foreign businesses are not looking for cheap labor. Today's manufacturing technology demands a higher level of skills and abilities; even assembly line workers need to understand high school-level mathematics so that they can calibrate and adjust the machinery they operate. Foreign businesses also need access

Spending more money on schools, by itself, will not be sufficient to attract foreign business. A major effort to refocus curriculum, to teach both basic and advanced science and mathematics skills is needed to develop the individuals who can make our region's economy prosper within the world economy.

to a pool of highly educated engineers and managers. States that can provide well-educated workers, as well as qualified engineers and managers, will have the greatest success in attracting new business—both foreign and domestic.

It should be noted that if low wages alone determine the location of a foreign business, Washington is bound to lose the "beauty contest," given the state's high wage scale. The average hourly earnings of production workers in Washington are the highest in the continental United States. To continue to maintain this disparity, Washington's workers must be more productive than those in other states. This will be possible only if a strong educational foundation is created and maintained.

The Value of Academic Achievement

In assessing the importance of an educated work force to Asian businesses, it's necessary to consider the value of academic achievement in Confucian East Asia (China, Japan, Taiwan, Hong Kong, and Korea). Confucian social structure is extremely hierarchical and pyramidal. Individuals have a certain class at birth, based on family and other affiliations. Upward movement between class levels is possible only through education. In this respect, academic achievement has been crucial in determining an individual's personal and economic prospects. If Washington's workers, in comparison, are educationally impoverished, we simply cannot expect Asian businesses to base their U.S. operations here.

A sound educational system not only increases Washington's share of Pacific Rim trade by attracting foreign businesses to the state, it develops entrepreneurs and business leaders who can establish internationally oriented, locally owned businesses, which foster economic development and create jobs. One of the strongest contributors to employment in Washington, for example, has been Microsoft. This rapidly growing, Redmond-based computer software company has created a large number of high-quality jobs both within the company and in the firms that provide it with goods and services. Because Microsoft offers superior products, which are in demand around the world, the company generates tremendous income from its international operations: Microsoft president Jon Shirley recently announced that international sales amounted to 48 percent of the company's business.

A case study describing the reasons for Microsoft's success would undoubtedly cite all the usual features of a business triumph, but this type of study could obscure the reason why this particular company is located in Washington. Years ago, a few educational stalwarts had the foresight to obtain a computer for Lakeside High School in Seattle—well before other schools had access to such equipment. Bill Gates's access to this computer produced the seed from which Microsoft grew. Without this introduction to a computer, Gates would probably be one of many bright young professionals, rather than the founder of a software company that employs more than 2,300 and generated $346 million in net revenues in 1987.

Those visionaries responsible for placing that computer in Lakeside High School created an incredible legacy. Because of their efforts, Microsoft now offers its employees productive, rewarding employment in Washington. And, for each Washington resident employed by the computer company, another two people—at a minimum—are employed by the companies that provide Microsoft with service support. Considering the impact that a single computer has had on this state, what mark will the book shortage at Seattle's Franklin High School, which requires several students to share the use of one book, have on Washington's future?

The Link Between Education and Prosperity

Developmental psychologists have concluded that a child's personality—his or her unique traits of mind and behavior—may be determined by the time the child is four or five years old. Economic distress, in the form of single-parent families, and economic necessity, reflected by the growing number of low- and middle-class two wage-earner couples, are forcing too many children in this age group into day care centers that offer little or poor supervision. The consequences of the lack of quality child care and preschool education may never be fully realized. Worse, it may take more than a generation and untold millions of dollars to correct the damage caused by this educational neglect.

Spending more money on schools, by itself, will not be sufficient to attract foreign business. A major effort to refocus curriculum, to teach both basic and advanced science and mathematics skills is needed to develop the individuals who can make our region's economy prosper within the world economy. The National Science Foundation has reported that American high school seniors place 12th in a 13-country list in their knowledge of chemistry and 13th in biology. In terms of funding, the immediate priority should be to teach the state's 465,000 illiterate adults the basics of reading and writing. (The estimated national illiteracy rate for adults in the United States is 15 percent.) In addition to concentrating on those same reading and writing skills for schoolchildren, we must boost the number and quality of the science and mathematics teachers in our state's educational institutions. Another positive step would be the establishment of a number of science and mathematics "magnet" schools, which could challenge the state's brightest youth and provide them with an environment that would encourage and refine their talents.

The link between educational levels and economic prosperity is not based on speculation; it can be demonstrated by empirical evidence. The fact is that not all regions of the United States have shared equally in recent economic growth. When one examines which regions of the United States have

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been economically successful, a common denominator emerges—each is close, in terms of both location and cooperation, to prestigious educational institutions. It is no accident that the Silicon Valley is located near Stanford or that the "Massachusetts miracle" took place in a city with Harvard, MIT, Boston College, Boston University, Tufts, Brandeis, and approximately 90 other institutions of higher learning in its greater metropolitan area. Students of Washington State history will recall that as a political compromise prior to statehood, major state institutions were divided up among the main territorial cities. Seattle received the University of Washington, Olympia, the capitol, and Walla Walla, the prison. It was no accident that Seattle rose to prominence in the state's economy. The businesses that have spun off from the University of Washington have had as much, if not more, impact on Seattle's prosperity than has its deep-water port. After all, Tacoma, Everett, and several other cities in Washington have excellent port facilities.

"One Job in Six"

Some will no doubt argue that a major effort to create international trade by raising educational levels is not essential. The huge volume of container cargo that passes through our ports has, unfortunately, led many Washington residents to believe that our state is playing a more significant role in international trade than is actually the case. Washington's role in Pacific Rim trade is relatively small. The fact that computers made in Massachusetts pass through the Port of Seattle is not an indication of increased exports from this state. Washington's politicians are fond of noting that "one job in six" is related to international trade. Fine. But what kind of jobs are these? Will they be sufficient to support our standard of living in the years to come?

If Boeing, a company that accounts for two of every five of the state's foreign trade dollars, is removed from the employment equation, the absence of quality jobs relating to international trade is striking. Putting a few more dockworkers on the job and creating markets for our timber and agricultural products is great, but, whether we like it or not, these resource extraction and transportation service jobs are not sufficient in number to sustain the state's standard of living. Well-paying jobs in the manufacturing sector and in middle management are disappearing at an alarming rate. Unemployment has given way to underemployment and low wages. The recent dramatic increases in the number of Washington's working poor is hidden, to a large extent, because these families are not particularly visible and because many are too proud to ask for help. These people need more than just jobs—they need jobs that pay a living wage. Changes in the international economy require that Washington's businesses manufacture products and services with a higher value-added component so that a higher wage scale can be supported. Producing and selling basic commodities like timber and wheat cannot meet this need in today's highly competitive global economy.

Forest products companies, such as Weyerhaeuser, are another important part of the state's economy. But even Washington-based Weyerhaeuser is investing in geographical areas that have lower labor and resource costs (Canada and the southern United States) and in sectors that produce a higher return on investment (real estate development). The forest products industry is now in one of its boom periods. Unfortunately, when the inevitable downturn begins, Washington will be faced with additional losses in employment and income.

One possibility for creating additional value-added income is to sell our resources in processed rather than raw form. We need to sell less timber and more finished lumber, less wheat and more processed food products. Greater amounts of agricultural production should be converted from bulk products to specialty items. But selling more specialty and processed food and wood products, like simply spending more money on schools, will not be sufficient. Exporting greater quantities of manufactured products such as airplanes and technology, which have a high value-added component, must be a major priority in formulating economic policy in Washington. Companies like Intermec, John Fluke Manufacturing, and Key Tronic are essential to the state's economic well-being.

To achieve greater economic stability, we need to become a state that plays host to more trading companies and financial institutions. Washington-based companies that are engaged in international trade, such as Seattle Pacific Industries (formerly Union Bay), Pacific Trail, and Airborne Freight, create the kind of value-added, high-paying professional jobs that will be necessary to support our region's standard of living. The efforts of these companies should be applauded and encouraged.

The improvement of Washington's educational system is one of the best strategies for enhancing the state's role in the Pacific Rim. Rather than concentrating on offering foreign businesses tax incentives and other benefits, actions that place U.S. companies at a comparative disadvantage, Washington State should focus on building—or rebuilding—its educational system. Once that task is completed, a public relations effort could be directed toward letting the world know about our educational system and our well-educated work force. One of the beauties of this approach is that Washington's residents will benefit regardless of whether foreign businesses decide to locate in the region. A renewed emphasis on education is unlikely to product striking short-term benefits, but, in the long-term, it is our only hope.

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